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A JOURNAL DEVOTED
 TO BEES
 AND HONEY
 AND HOME
 INTERESTS.

ILLUSTRATED
 SEMI-MONTHLY
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Vol. XXII.

MAY 15, 1894.

No. 10.

FROM DR. C. C. MILLER.

MY PERCOLATOR makes nice work, but takes 24 hours to make 5 gallons.

DADANT USES, if I figure rightly, a comb surface equal to 15 Dovetail frames.

FROGS are reported in Germany as catching bees when at work on white clover.

\$750 AND COSTS was the penalty inflicted on H. Eichler, in Germany, for adulterating honey.

THAT LIVER tasted good, friend Root, p. 386; but if you want something fine, just try *calf's* liver.

I WONDER if chemically pure sugar, even if expensive, is not a desideratum for shipping queens.

TOOK OUT OF CELLAR nearly all my bees April 18. Tiptop condition. Never saw so few dead bees on cellar-bottom.

GORGEOUS SPRING! To-day, April 30, bees have all they can do on hard maple, plum, and dandelion. Cherry just out.

THE LAYENS HIVE, which is quite popular in Europe, has about three times the capacity of an 8-frame Dovetail.

YE EDITOR has put me on the fence, p. 362. All right. I'll stay there till I see which side has most solid ground to alight on.

THAT V EDGE. Say, Ernest, that talk of yours on p. 383 kind o' staggers me, but I won't give up till I have a consultation with the bees.

DID YOU KNOW that Hasty was a poet? Witness the following from *Review*:

And the Smith named Jake contributes the fact
 That, although nice honey by frost is cracked,
 It will stand all the zeros you please intact,
 If through summer it's up in the garret packed.
 [Kur-ract.]

GERSTUNG thinks the diseased condition of bees in spring is consumption, caused by eating sugar instead of honey during time of breeding or activity.

THE *Bee-keepers' Quarterly*, Heddon's new paper, strikes out in a new field—it's all editorial. But it seems a good while to wait three months between meals.

NATURAL SWARMING, according to replies in *A. B. J.*, seems to be growing in favor as compared with artificial increase. But I never want to see another swarm.

THE EDITOR HOLDS, page 367, that it's all the same whether you give more room in a hive at the side or below. Can any one confirm or refute that?

ADULTERATION is not entirely confined to this country. *Luxemburg B. Z.* reports a purchase of three boxes of honey from a peddler, but the second and third boxes contained only soft soap.

IF YOU'RE UNFORTUNATE enough to have lots of burr-combs, raise your super to-day and let it right down again. To-morrow you can take it off dry, for the bees will empty the honey. That's the way I do with honey-boards.

FIRE IN CELLAR fits my case, although it may be bad for others. After experimenting two winters without fire, I fired up again last winter, and lost only one colony out of 259, besides 7 that [printer, have you got any small type?] STARVED.

I never used a stove but one year, and then I lost nearly all of the bees.—*Doolittle*.

I never used a cellar without a stove for many years, except two years, and then I lost heavily in bees.—*Miller*.

What makes the difference?

FOUL-BROOD CURE reported in *Lux. Bienenzeitung*. Wash the bottom-board with 5 per cent carbolic acid; put 1½ oz. formic acid in one of the outside combs, and repeat the dose in 8 days. [Wouldn't have any faith in such

treatment. We have tried essentially this, and it was a failure.—Ed.]

A GRAIN OF POLLEN is mentioned on page 377 as "conveyed in some occult way through the whole length of the silk," to make a perfect ear of corn. Doesn't a pollen grain alight on the end of each silk and stay there *growing* down to the grain on each ear?

A SCHOOLTEACHER in Germany distributed 4 lbs. of sunflower seed among his scholars, and gave four prizes of honey at harvest to the four who had most plants; 1500 plants were in the village, instead of 10, as formerly, and the next year none of the scholars ate the seed given them, as some did the first year.

C. J. H. GRAVENHORST, the able editor of *Deutsche Illustrierte Bienenzeitung*, mentions with evident approval the cordial feeling that prevails among editors of bee-journals in this country. He seems to think the writers are all on good terms, but he hasn't noticed how Taylor is going for my scalp.

DOOLITTLE properly advises making special dummies *after* you're satisfied you want to use only 4 or 5 frames. Possibly you may not want to continue with so few frames, and you can experiment with thin dummies, or with a single dummy and the vacancy filled with hay. I used a good deal of hay one year.

TOP-BARS $1\frac{1}{4}$ square, with $\frac{1}{4}$ inch between, in 15 colonies, says Hon. R. L. Taylor, in *Review*, gave "scarcely a sign of a burr-comb except where a frame was improperly spaced."

The results were very satisfactory, and, unless seasons of more abundant honey-flow produce different results, leave nothing to be desired."

THE AVERAGE DISTANCE that bees naturally space combs is $1\frac{1}{2}$ inches, according to Doolittle, and $1\frac{3}{8}$ according to Mrs. Atchley. Which is right? Or do bees space closer in a warm climate? [We are coming more and more to believe that bees don't have any average distance, else why do authorities disagree? But, why ask what spacing the bees prefer? Rather ask what spacing gives the most worker brood, least drone brood, the most honey in the supers, and the truest combs.—Ed.]

HURRAH FOR YOU! I believe you've struck it with that soft-walled foundation described on p. 383. At any rate, it looks hopeful. Get ready for an order from me. [But, say, Doctor, do we want foundation so soft? We should be afraid just yet to offer it to the public, for *fear* it would buckle between the wires in drawing out, and if not put on wires for fear it would stretch. From some little tests we have made, there is danger of this. But by making the sheets very heavy we get beautiful comb. The Given foundation, such as we have seen for the brood-chamber, is heavy, but such heavy wax is expensive.—Ed].



GALVANIZED IRON FOR BEE-KEEPERS.

WAXING GALVANIZED CANS.

Friend Root:—In regard to galvanized tanks, three years ago I was forced to have me three large tanks made for storing honey; and as I wished to have them very stout I had each of the three tanks, holding 50-gallons, made out of galvanized iron. I had all of them made with a large-size molasses-gate at the bottom. I had two made for extracted honey. They were about as tall as a common alcohol-barrel. The one for comb honey was made larger across, and not so tall—say about half. I had them made to store honey in for my own use. When I released them my wife told me I should not put any honey in them as they were. "What shall I do, wife? I have bought the tanks at a cost of \$4.50 each, and they are all I have to store our surplus honey in." "Oh!" said she, "that can be very easily remedied. You let them alone and I will fix them all right." So I thought it best to let her have her own way. She washed them out clean and nice, and in a couple of hours she called me in to look at our tanks. What do you think she had done to them? She had given them about two coats of wax, and no honey could come in contact with the cans. I have been using said cans now for about three years, and I do not want any thing nicer, though I see one of the cans has got some of the wax coating knocked off; and if my bees do any thing this year I will have the cans rewaxed. I do not think they would do well to ship unless the cans are well cared for, as the coating is liable to be knocked off when jarred much; but from my experience I think they are as safe as any thing you can store honey in, if well waxed. It costs very little to do it, and it is not much trouble to wax them. One good coat is enough.

Franklin, Tenn.

G. W. REAMS.

[And yet, friend R., you do not know whether the cans would not have done just as well without the waxing. See the following letter:]

GALVANIZED IRON FOR HONEY-UTENSILS.

In response to an article in April 15th *GLEANINGS*, page 334, in regard to galvanized vessels injuring honey, I would say that I use a large galvanized pan the year round. I draw every drop of honey from the extractor into this pan, and I use it during the winter for liquefying granulated honey. I never could detect any injury to the honey. I send you a sample of honey herewith, that has been melted three times in this pan. It is slightly darkened by getting a little too hot at one time, caused by the water getting too low in the sheet-iron pan containing the galvanized pan. If there is any

injury from the use of galvanized vessels, we should all know it.

Bees wintered well here. Out of 108 I lost 6 colonies. I took 44 colonies from the cellar March 17, and they gathered quite a little pollen from hazelnut, and *some* willow. I returned them again on the 24th. on account of the cold spell, and removed them on the 13th of April, since when they have gathered honey from the soft maple every fair day.

Hillsboro, Wis., Apr. 23.

ELIAS FOX.

[This is valuable and to the point. We shall take pleasure in having the honey submitted to a chemist—not to ascertain its purity, but to determine whether there is present enough of the zinc to be poisonous to even a child.

We should be very glad to hear from others, especially from the California bee-keepers, because it is so important to know whether or not there is any danger in the use of such metal when used for storage-tanks.—Ed.]

NO BAD RESULTS FROM THE USE OF GALVANIZED TANKS.

In reply to your article, p. 334, in regard to galvanized tanks etc., being poisonous, I will say I have been using such a tank, 110 gallons, constantly, for three years, and have never experienced any bad results. I always keep about 15 or 20 gallons in the tank, from one season to another, from which I send you a sample that has stood for 12 months. Please test it and let us hear further from it, as I have been anxious to get more light on the subject.

Hermanville, Miss., April 25. R. W. BRUCE.

as, so are we.—Ed.]

PREVENTION OF SWARMING.

A NEW PLAN FOR CONSIDERATION.

By Edson Hains.

Swarming as related to the production of comb honey is a problem that has engaged the attention of the bee-keepers of the country for many years, for the reason that a swarm of bees is likely to leave the hive at the time when they are most needed, taking with them so many bees that the parent stock would be so weak as to store but little if any surplus honey, as the honey season would often be over by the time they could regain their strength, and the colony would be without surplus honey, and still have a hive full of bees to eat the honey through the autumn months, but too old at the beginning of winter to be of any use in the spring, when we should find the colony weak in bees which were young enough to help in caring for the brood for the building-up of the colony for another season.

My method of preventing swarming consists in placing the entrance of the hive so as to let the bees in at the side of the combs instead of their going on to the ends of them. This enables me to put a queen-excluding division-board back of the first and second combs. Back

of the excluding division-board I place the remaining eight combs and queen. I then cover them with another piece of zinc excluder, confining the queen and brood to the eight frames.

When I put on the surplus case I place it so the bees can have ready access to it from combs in front of the excluder, without passing through the zinc. This partially keeps the honey-gatherers out of the brood-nest, and saves them the trouble of going through the zinc heavily laden with honey, and it prevents them from emptying their load right in the brood-nest where the queen is about to lay her eggs. As the brood-nest is not overcrowded with bees, the queen lays her eggs without being bothered, and the nurse-bees are not incited thereby to prepare for swarming. In this way the desire to swarm on the part of either bees or queen is in a great measure prevented; and if the queen, in her efforts to leave the hive, should work her way through the excluder, as she might if a small queen, and clipped, she has yet combs to go on to; and, as I see the bees returning, I can open the hive; and if I find the queen in front of the excluder I return her to the brood-nest.

As an experiment, in the fore part of the season of 1893 I placed a zinc excluder over the hive-body, full of surplus combs for extracting; above the zinc I placed a hive containing brood-combs, bees, and queen. When I went to extract the honey, the upper story, where I put the queen, was full of brood and honey; but failing to find the queen or young brood I looked below, where I found the queen and a few square inches of very young brood in one frame. All, excepting that one, were full of sealed honey. I extracted the honey and returned the queen to the upper story, where she remained until I prepared the stock for winter. Had I left the colony (a strong one) without an excluder, the bees most likely would have swarmed and the queen been lost. If lost, a batch of queen-cells would have been started, and probably the bees would have left the hive just at the beginning of the basswood flow. This is the principal reason why bees in box hives (where the extractor can not be used) are so apt to swarm, and so rarely to be of any profit to the bee-keeper. The same condition renders apiculture unprofitable in movable-frame hives not guarded against swarming by some one of the various methods.

The question may be asked, "How do the drones get out to fly?" The remedy is, simply to place drone brood which is from the best queens (and especially if queen, drones, and workers are good) in front of a queen-excluding division-board. Undesirable drones should be kept in the brood nest or destroyed. Virgin queens, being smaller, will be able to get through the excluder to take their flight. The question has been asked, "Why not nail an

excluder in front of the entrance?" This is better than nothing, but stops more or less the ventilation of the hive; and drones trying to come out clog the entrance; and if the queen should get through the excluder she would be outside of the hive, and more likely to get lost; besides, drones can not by this method be given liberty to leave the hive at pleasure. If the hive is a box hive, place it over a hive-body filled with extracting-combs, with a zinc excluder between them.

Bedford, O., April 6.

[We will explain to our readers, that Edson Hains is a son of J. B., of Hains-feeder fame. Mr. Hains, senior, while here, fully explained the principle; and there is one point, perhaps, that it will be well to emphasize in order that our readers may get clearly before them the principle that is supposed to deter swarming. The two combs next to the entrance (separated from the rest of the other combs containing brood, queen, and worker-bees, by perforated zinc), are intended to act as a sort of ladderway for easy access to the super above. Of course, over these two combs there is no perforated zinc. The bees may crawl upward on the first or second, and travel straight up into the super without passing zinc. It is assumed that the bees dislike to go through the metal; and if there is a shorter and easier route they will take it in preference to going through the zinc twice. Whether the bees will invariably take the shorter of two routes to the super through the hive, we can not say; but Messrs. Hains say that they do. That being the case, the bees will be more likely to deposit surplus honey in the supers, and give the queen ample room for laying below in her apartment of 8 combs surrounded by perforated zinc on the exposed sides. This unlimited room is expected to take away the desire for swarming. We had intended to make an engraving; but Mr. Hains' meaning is sufficiently clear so any one will get the idea.

This method of non-swarming can be very easily practiced with the old-style ten-frame Simplicity hive, because with this the body can slip endwise or sidewise to give the necessary entrance; but with the Dovetailed hive it may not be so easy. However, this can be done: Confine the queen to six or eight combs, as the case may be, leaving two combs for ladderways to the super. Close up that part of the regular entrance communicating with the six combs. As the remaining part would hardly be large enough, a hole could be bored directly over it, so the bees would not be crowded in passing to and fro.

Mr. Hains, senior, informs us that a trial of a few colonies on this plan was very satisfactory, and that other colonies not so arranged swarmed.—Ed.]

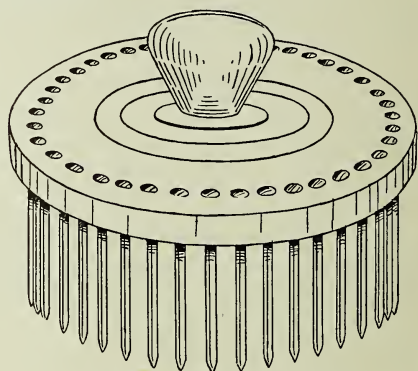
A GERMAN INTRODUCING-CAGE.

HOW IT MAY BE USED.

By Karl R. Mathey.

The apparatus below serves a double purpose; first, in case of a division of a colony on movable frames, the queen may be confined to the comb in one frame, so that she can not run away, and afterward she may be returned to the hive. If the queen becomes afflicted with lice, take the apparatus in the hand and hold it near her till a crowd of bees gather around

her; then put the cage down over the queen, and she will then be penned in with a lot of workers. After this confinement of the queen has taken place, with a number of bees, there begins a pushing and crowding and jostling on the part of the confined bees, to whom the imprisonment is by no means agreeable. By this means, it will be seen, the lice are completely removed from the queen in a mechanical manner. After a while the cage is removed, when the cleaned queen, lively and glad, will retire, the lice having entirely disappeared from her. By this simple imprisonment of the queen, with as many bees as the apparatus will hold, it will be seen that the bees, without knowing it, have relieved her majesty of her tormentors.



A GERMAN INTRODUCING-CAGE.

This tool is of marked service in the introduction of queens. The method of procedure is as follows: Take the cage and invert it skillfully over the queen; then push a piece of paper under it and carry it to a comb, pressing the cage gently against the comb, at the same time drawing the paper out; then push the points into the comb far enough to make the cage stay, and then put the comb where the bees can not molest the queen.

After the new queen is in position, leave her in the cage till the bees are as quiet as they usually are on the combs, after which she may be released. The freeing of the queen must take place with the greatest quietness. If a fine wire be attached to the knob of the cage, and the other end of it be pushed up through a small hole in the cover, the cage may be lifted up without removing the cover, but not entirely removed. Then the bees will let the queen free themselves, and receive her safely in this way; after which the hive may be opened and the cage taken away.

Medina, O., May 1.

[This cage may also be used for confining a valuable queen to a single comb for a few moments while the other combs are being handled—as, for instance, extracted. When all the combs are replaced, except the one the queen is on, the cage may be removed and the comb

put back. When a queen to be introduced is confined, we feel quite sure that, at the proper time, the bees would gnaw under and release her without any attention on the part of the apiarist.—Ed.]

HOW TO KEEP QUEENS WHEN WE HAVE A SURPLUS.

AN EXCELLENT SUGGESTION.

By Mrs. Jennie Atchley.

For the last two years I have not had a chance to put in practice my plans; but I have tried them sufficiently to know that it is an excellent way to keep queens that we have no immediate use for, and at the same time we wish to keep the nuclei at work raising queens as fast as the young queens have laid two or three combs of eggs. I used to keep them caged on a table, ready to go at a moment's notice, when an order came. Well, sometimes orders did not come for several days, and my queens, of course, were more or less injured if kept too long in this way; and to make it profitable we can not afford to let the nuclei keep their queens till orders come to take them. To overcome this trouble I went to work and constructed a lot of small hives, just large enough to hold two sections $4\frac{1}{4}$ inches square by $1\frac{1}{8}$ inches wide. All these sections that we had unfinished we lay by to go in our little nuclei. Now, we could take from fifty to one hundred workers, or enough to keep the queen in good shape. It is no trouble to speak of, to prepare two or three hundred of these little nuclei, something after the little Alley nuclei. We may use little frames if we choose. I use the sections, as they usually have plenty of honey to last the queen and bees a month or more, and the queen will go to laying, and assume the same attitude of a large colony. Then the queen is never so filled with eggs that it would be dangerous to cage and mail her right off. I do not like to cage and mail a queen that is in full laying plight without giving her time to unload herself of eggs. Well, the little-nuclei plan has the queens in good shape to be mailed at once without any danger of being injured.

To keep the queens and bees from swarming out I use, over the entrance, one perforation of queen-excluder zinc, and robber bees will never enter through the zinc to amount to anything. These little hives can be placed on a shelf in the shade, moderately close together. We may make a record of where each queen was taken from; and if we keep any of them long enough they can be tested, and all the finest ones selected to fill orders for select queens. Robbers have never bothered our little hives, as we seldom have a surplus of queens till the weather gets warm and honey is coming in so there is no danger of robbers. I do not like the idea of raising queens in little hives, as the queen and bees are too likely to swarm out, as

we can not keep excluding zinc on till the queens have mated, which gives them every chance to leave. If the bees should take a notion to swarm out of the little hives, where our laying queens are, there will always be bees enough return to be a good retinue for the queen. Then these little nuclei are good to introduce another queen to as soon as one is sold out. I think I can raise a third more queens with a given number of nuclei by this method. These little hives can be made cheaply at the factories, as scraps will answer for them. If you do not think this a good way to keep your surplus queens, just try it.

Beeville, Texas, Jan. 27.

[We are sure this method of keeping queens is excellent, and may with profit be put in practice by other queen-breeders who desire to send out queens by return mail. These little nucleus hives are similar to those used by E. L. Pratt, then of Beverly, Mass.—Ed.]

BEEES AND FRUIT ON THE ISLANDS.

A REPLY TO PROF. COOK.

By Thaddeus Smith.

As Prof. Cook, in GLEANINGS of March 15, has called in question the correctness of my statement in regard to bees and fruit fertilization on the islands of Lake Erie, will you kindly allow me, through the same medium, to confirm my statement by the testimony of others? As it was possible that I might be in error in regard to some of the statements, I sent a copy of GLEANINGS containing the discussion, to Mr. George M. High, of Middle Bass Island, Ohio, and I asked him, if there were any misstatements of facts, to correct them, and to give me his experience in regard to the matter. Mr. High has lived on the island for 26 years, and has been engaged in fruit culture all the time. He is a very close observer of every detail pertaining to fruit culture—an intelligent and reliable gentleman. He writes me as follows:

Some fifteen years ago my nearest neighbor kept a few stands of bees, and, of course, I noticed them upon plants and trees during blooming-time. Since then no bees have been kept here, yet I can see no difference in the fruit production. For more than a dozen years I don't recollect of seeing a honey-bee on the island. We have a few bumble-bees, but in such small numbers that they could not begin to do the work of fertilization, if it were necessary. I think, with you, that bees are not required here to fertilize fruit. The immense crops grown here last season, and the many seasons before, would disprove the theory. I have two Lombard plums that have set a good crop of fruit every year since 1886. No, you need take nothing back, for I believe that we have grown as good fruit, and as plentiful, in the past 15 years as when bees were kept on the place next to ours.

Middle Bass Island contains about 700 acres, and most of it is under fruit culture. Mr. High writes that he has nearly 1000 fruit-trees, and

is still planting more this spring. North Bass Island—two miles north of the former—has 600 acres, and is also noted for its fine fruit without bees. The Old Hen Island is four miles north of North Bass, six miles west from Pelee Island, and much further from the main shore or any other place where bees are kept. It has about 12 acres. A neighbor was telling me several days ago about taking a little excursion party there last summer, and incidentally remarked that there were large quantities of the finest and largest strawberries grown there that he ever saw. Other fruits have been lately planted there, but I don't know whether they are bearing or not. I will investigate this summer.

Pelee Island, Ont., Canada.

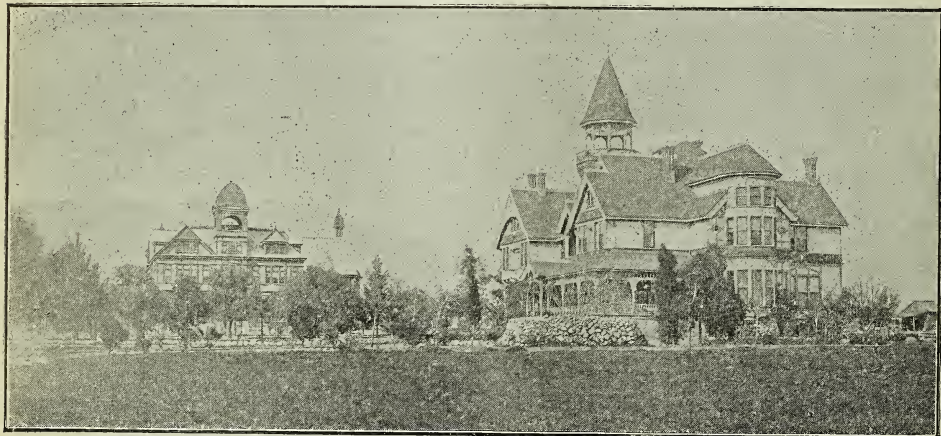
RAMBLE 108.

CLAREMONT; PROF. COOK AND HIS NEW WORK AT THE COLLEGE.

A very fertile district surrounds Ontario, and its productiveness is seen not only in fruits and beets, but small fruits do equally well. There was grown, on two-fifths of an acre of land, 5333 boxes of strawberries, which were sold for \$365, or at the rate of \$900 per acre. The potato-

loads of lumber were immediately hauled on, hammers and saws resounded, and at nightfall the builder gathered his family around the new fireside in his new house. Of course, the house was not very pretentious. The rooms were not numerous, but were elegantly frescoed with illustrated newspapers. If the proper enjoyment could not be found in the house it could be found outdoors, for at that season rains do not interfere, and such great whiffs of climate a person can here get into his system!

A pleasant ride of four miles through more or less orange-groves landed us in Claremont, and in front of the college buildings where Prof. A. J. Cook now spends the most of his time imparting knowledge to the rising generation. Claremont is a brand-new town, only a few miles from Pomona and the college bearing the name "Pomona College." It sort o' blankets Claremont, and its name is not so prominent as it deserves. The town now consists of magnificent distances, with now and then a house upon what will eventually turn out to be a street-corner. There is, therefore, not much regularity to the town, and the next lot to a fine residence we find in its primitive condition of brush in variety, greasewood predominating. The college is embraced in two



POMONA COLLEGE AT CLAREMONT; PROF. COOK'S NEW HOME.

grower is also in his proper element here, for two crops can be taken from the soil each year. An Eastern man arrived, bought some land, or, rather, bargained for it, and raised enough potatoes in one year to pay for it. Of course, the prices were happily in favor of the producer.

This is also a location noted for rapid house-building. A gentleman purchased a small ranch, upon which there was a field of barley. He gave notice to the man who owned the barley that a certain portion of it must be cut early the next morning. The barley was cut,

buildings—the Sumner Hall and the Cyrus Holmes, Jr., Hall. The latter is the larger of the two buildings, and contains the classrooms, chapel, museum, and various other rooms. I brought the camera to bear upon the buildings, and am sure the readers of GLEANINGS will be interested to see a portion of Prof. Cook's new home.

The Sumner Hall was erected for a hotel; but the boom dropped out of the hotel scheme; and the college scheme, being the more healthy of the two, the building was absorbed, and is used exclusively for the ladies. The building

is fair to look upon, just as some ladies are, and is painted, of course, just as some ladies are.

I kept friend Wilder just as far away from the building as possible. Of course, the Rambler, being such an old duffer, had nothing to fear; but my companion, being young and susceptible to sly glances, I had to frequently admonish him about the thorn and the rose. He behaved himself remarkably well, however; and when we found Prof. Cook in the museum, all thoughts of the fair sex were banished. Like all of the surroundings, the museum is new, and the collection looks small beside the extensive museum in Lansing, Mich.; but it is evident, from the rapid additions now being

man. I heard a person, not long ago, irreverently refer to a certain member of the fair sex as a duck of a woman. In that light I was glad to hear Prof. C. make the remark. A little later, however, he seemed to reverse his opinion by saying that there must be something wrong with all of those California bachelors who would not so much as try to cheer their lonely cabins with a wifely fixture. Prof. C. is certainly well provided for in that matter, and has a model home in a little cottage near the college.

I was happy to find Prof. Cook alive to the interests of the honey-producers of California; and as members of the State Association we discussed the most vital points at issue; and the most vital of all points, we agreed, was the marketing of our products. It is proposed to make that the issue until something is accomplished. The fact is ever before us, that not much can be accomplished without the co-operation of the producers. The hint is, therefore, dropped that our bee-keepers can be thinking and acting upon it during the coming season.

Prof. Cook is now in a fair way to own an apiary near the college, and it is hoped that the efforts now being advanced will result in the establishment of an experiment station here. The college has upon its roll nearly 200 students, and no doubt a large class would be interested in the study of the wonders of the bee-hive. It would seem that, if students can be interested in the study of bee culture anywhere, it would be in this honey country; and though the students may not hereafter become bee-keepers, it is safe to say that many of them will become intelligent orchardists. Prof. Cook believes in object-lessons, and puts cheese-cloth bags over various branches of fruit-trees, excluding

the bees from those parts, and showing the value of the bee in the proper pollenization of the flower in order to secure fruit. The student is thus made to appreciate the mission of the honey-bee, and to become its warm friend. With his duties in the class-room, with the bees, his Jersey cow, and bicycle, Prof. C. is a very busy man.

Claremont has a splendid backing in the snow-clad San Antonio Mountains, the highest peak bearing the familiar name of "Old Baldy." The water from San Antonio Canyon provides water for an extensive irrigating system; also for power for the electric lamps of Ontario and Pomona, and will soon be harnessed to a line



placed in the cases, that the museum will be a grand success. Prof. C. enthruses his students to become collectors of every thing curious; and I will drop the hint here, if any person can send specimen birds, insects, fossils, or curios, they will be thankfully received and properly credited. Mr. Wilder, being an expert bird-undertaker, was interested in the museum. Their conversation ran largely to cross-beaks, hook-bills, sharp-shins, etc. Prof. C. said his sharp-shins had all gone to the midwinter fair, where they were posing for the curious to look at. They wound up their bird-talk on a disgruntled-looking pair of ducks. Prof. C. emphasized the remark that he was not a duck-

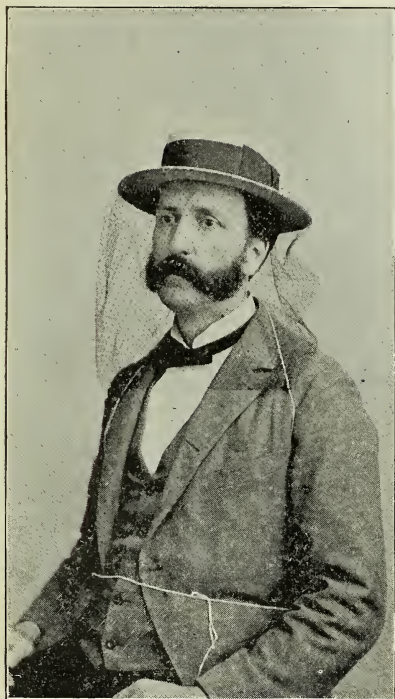
of street-cars from Claremont to Pomona. Though hard times now pinches the pockets of the people here as well as elsewhere, the town is sure to grow, and to become noted in the future annals of bee culture; at least, that is the wish of the

RAMBLER.

HOW TO WEAR A VEIL

WITHOUT TUCKING IT INSIDE THE COLLAR.

When it is necessary to wear a veil in hot weather, who has not wished that there were some way of holding it down, aside from that of tucking it inside the collar? When the neck is hot and sweaty, how it feels with a sort of muffler pressed close against it by the collar! Besides this, the veil is held suffocatingly close to the face. All this may be avoided, and I'll tell you how. In a hem in the bottom of the veil run a string, leaving about a foot of the hem, right in front, unoccupied by the string.

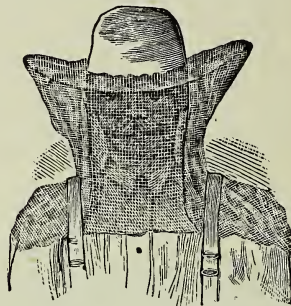


That is, let the string enter the hem at about six inches to the right of the center of the front; pass it around the back of the neck, bringing it out of the hem at a point six inches to the left of the center. The projecting ends of the string must be long enough to pass under the arms, cross at the back, and then be brought around and tied in front. The string holds the edge of the veil securely out upon the shoulders; while, if the right length of hem is

left without a string in front, that part will be drawn snugly across the breast.

To Mr. Porter, of bee-escape fame, belongs the honor of devising this unsurpassable way of holding down a bee-veil.—*Bee-keepers' Review*, April.

[This is a modification of a plan we use in our apiary. We tuck the corners of the veil under



the suspenders in this fashion. As a general thing, it is not comfortable to wear either coat or vest in the apiary.

By the way, the half-tone, also from the *Review*, is a splendid likeness of Mr. Hutchinson.—Ed.]

MANUM IN THE APIARY.

MAKING SOFT SOAP; FEEDING TO PREVENT STARVATION.

By A. E. Manum.

"Hello, Leslie! You have taken me by surprise, surely."

"What in the world are you doing now, Manum?"

"Oh! I am making soap. My wife is determined to have soft soap to use. She thinks she can't get along without old-fashioned soft soap with many kinds of work; and to please her, and to keep peace in the family, I went at it this morning. I offered to give her \$1.00 per barrel for the 3 bbls. of ashes, to use on my strawberries, and 10 cts. per lb. for the soap-grease she has saved during the winter; and, besides, \$2.00 for my day's work in making the soap. But, no use; the soap she *must* have, and soap she shall have, if it takes a week to make it, and I guess it will by the appearance of things. Somehow it doesn't come good. I am trying to boil it down now to see if that is what it wants."

"Is it the right time of the moon, Manum? My mother used to be governed by the moon in making soap."

"So did my mother. But I declare I never thought to consult the moon. May be that is what ails my soap. The moon may be on a racket, or vexed with the earth, or something of the sort. Who knows?"

"Manum, have you examined the bees yet this spring?"

"No, Leslie, I have not. I think I must very soon, if I ever get out of the soap business."

"Well, I examined my two colonies this morning, and I found they were short of honey, and I came over to tell you about it, thinking that, perhaps, some of yours might also be short without your being aware of it. Suppose we go out and look at a few colonies."

"Very well, Leslie. I will go and light the smoker. Well, here; I will open this one nearest the honey-house. This one had 27 lbs. last fall, and, just look! they haven't more than one pound of honey. Why! I am surprised."

"That is about as I expected you would find them, since looking over mine."

"And this next colony had 30 lbs., and they are nearly in a starving condition. Did you ever see the beat of this? And this next one also had 30 lbs., and they are dead. Starved? I declare, Leslie, I am afraid my out-apiaries are in bad condition. I must look after them at once. I had no thoughts that any of my bees would starve this spring, as I fed liberally last fall. But the mild winter we have had gave the bees opportunity to get to the food at almost any time; and, the colonies being very strong in the fall, they have consumed more feed than usual."

"What are you going to do in this case, Manum?"

"Well, I have either got to sink or swim; that is, I must either feed the bees at once or let them die. But I have got the bees, and have wintered them through so far; and although I do not expect a paying crop of honey this year, it won't do to let them starve now; though if they are all in this condition it will cost me \$200 or more for sugar to carry them through until raspberries bloom, when they may by that time be self-supporting."

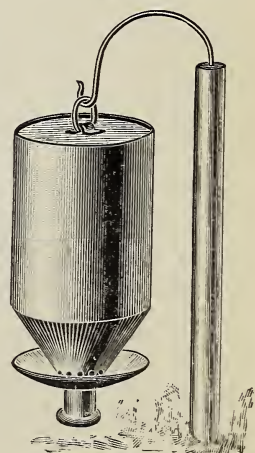
"You propose feeding them sugar, do you, Manum?"

"Well, I have a few combs of honey at each apiary, as well as some partly filled sections, and shall use them as far as they go."

"How will you manage to feed them from the sections? Will you give them a whole clamping, or lay the sections on top of the honey-board?"

"No, I will do neither. I don't like to place the clamps of sections on for the bees to clean out as they are placed during the working season, because the bees are very liable to soil the combs too much, which would ruin them for further use. Nor do I approve of piling sections on the honey-board and then making an opening for the bees to come up to them, because in that case the opening thus made permits the escape of much heat from below. In fact, it causes a direct draft through the hive, from the entrance up through. At this season such drafts are very injurious, as the colonies need all the heat they can generate; and for this same reason I do not open my hives any

oftener than I can help, in early spring. I shall, therefore, give them these partly filled sections inside the brood-chamber, and I will get some now and put them in this hive. There, I take out two of these outside empty combs and fill in with sections, and with this old steel-wire hair-brush I break the cappings before putting the sections down in place; and by to-morrow they will be empty, and should be removed before they become soiled, and more may be put in if required. When feeding sugar syrup I use the new feeder, which prevents the escape of any heat from below. I think, however, that I shall try a new device for feeding outside of the hives. There are some bee-keepers who prefer feeding in the open air for stimulative feeding; and as I have a machine that I think will answer the purpose, I propose trying it. Here it is, a tin can holding about one gallon. These cans are my chicken water-pots, and are the nicest arrangement I ever saw for that purpose. As you see, by hanging them up on these stakes, just so they will clear the ground, the chickens or old fowls can't get into them to dirty the water, and there is always water in the dish where they can step up to it and drink. And now I propose to



CHICKEN WATER-FEEDER
AND BEE FEEDER.

try them for bee-feeders, simply for spring feeding. You see, I can hang them up anywhere in the apiary, or as far from it as I please; and to fill them, simply invert the feeder, unscrew the cap, pour in the feed, screw back the cap, and hang it up; and as fast as the bees take the feed, the cup will fill up."

"Are these water-pots or feeders something of your invention, Manum?"

"No, Leslie. Henry Isham is the inventor." He made them for his White Wonder chickens, and I dare say he never thought to use them for bee-feeders; hence I can claim only the idea of using them for feeders."

"Manum, have you got any wood screws longer than those ordinarily used? I want a few for a special use."

"No, Leslie; but I shall soon have. I have had very many calls for longer screws of late, and I have decided to keep them in stock. They will be $\frac{3}{16}$ longer than the common ones. The price will be the same for both lengths; and as I first introduced wood screws for use in the apiary, everybody has a right to use them,

as there is no patent on them. I must now look after my soap. There, wife is fussing with it. She thinks I don't know how to make soap; but I will show her I do before I get through with it."

"Don't you believe this lye is too strong?" asks Mrs. M.

"Why! bless you, no. You can't get lye too strong to make soap. All it wants is boiling."

"Well, but you have been boiling it all day. I think there is something wrong. It either wants water or more lye," says Mrs. M.

"I will have it all right, I assure you. I know all about soap-making."

"There, now, she has gone, Leslie. Let us see what is the matter with this soap."

"Well, Manum, I think you want more grease, for one thing; and, as your wife said, the lye is too strong, for, as you see, I have added one spoonful of water to two of soap, and you see it is quite thick; and now by adding a little grease it is fine soap."

"Yes, that is just what I thought it needed all the time. You see, I know all about making soap; and all I have to do now is to add about 8 lbs. of grease and $\frac{1}{8}$ water, and it will be nice soap, just as I expected. But, Leslie, don't tell my wife that you suggested any of these additions, for she would surely accuse me of being deficient in the art of soap-making."

Bristol, Vt.

[That water-tank for chickens is capital. We have had similar devices to be set on the ground, but somehow the chickens would scratch dirt into them, or tip them over. But they can't cut up any such caper when the tank is hung from a stake. As an open-air feeder for bees, no doubt it would do nicely also.—Ed.]

MARKETING CALIFORNIA HONEY.

A BEE-KEEPERS' EXCHANGE PROPOSED.

By Rambler.

"The honey market in Southern California," as treated by Prof. Cook, on page 274 of GLEANINGS, is a topic of deepest interest to the producers of this State; but it has a broader significance, for the price of honey in California touches the pockets of every producer in the far East.

In a recent letter, a New York friend writes, "I wish you would keep your four-cent honey in California." I have no doubt that our producers would be pleased to accommodate our friend by sending east only six-cent honey; but the marketing of our product has fallen into the hands of dealers, and it is for their interest to bear the product to the lowest possible figure. We are thus running along in a rut from which it will require much lifting power to rescue us.

The producers of citrus fruits found themselves in a similar rut with the dealers, and

their products were borne down to ruinously low prices; hence the organization of the exchange. This organization has had to deal with some obstacles. Wholesale shippers, local buyers, and the whole tribe of middlemen, were opposed to the exchange, and have tried to break its influence—first, by causing a break in the ranks of those who had promised to ship through the exchange; and, next, by discrediting the organization abroad. With but few exceptions the patrons held to their organization; and eastern dealers, finding the exchange could fill their orders with a superior quality of fruit, carloads of it began to move, and at better prices than could be procured through the local speculators; and at present the exchange seems to be working upon a substantial and permanent basis. It is no wonder, then, that the honey-producer looks toward the exchange for help and consolation to his depleted pocketbook.

In dealing with the honey question, the methods of our fruit-men must be followed; and it would be of vital importance for the patrons to stand by the organization; and it must be borne in mind that a great many bee-keepers virtually barter away their rights before the honey is produced. The bee-keeper is in straitened circumstances, and, going to the local dealer, who, foreseeing this state of things, provides a goodly pile of honey-cans. The bee-keeper obtains the cans, giving the dealer a lien upon his product. In order to hold this class of bee-keepers the exchange should take the place of the local dealer, and have on hand a stock of cans. In fact, the exchange could order all the cans needed in certain districts. This fact would point to an organization independent of the fruit-men. An organization of this kind, having the control of the shipping, could place the product in the various markets at the best advantage, and at times to suit the market. Such an organization should be prepared to grade honey, and to repack if advisable, to a certain extent, in smaller packages suitable for the consumer.

In looking at the marketing of honey, still further we find another problem: When the flowers yield abundantly, and our tanks and cans are filled, we work forward and establish a good trade. We are caught, however, in the midst of our high hopes, with a season of total failure, or the next thing to it. We have no honey to ship, our trade lapses, and every lapse puts us to the bottom of the hill again. The only remedy in such a case would be the organization of many exchanges in the East; then when one can not fill its accustomed markets another could step in and help, so there may be no serious lapse in the markets. We should certainly be pleased to hold all of our four-cent honey here; and in order to send only our six-cent honey we must have the co-operation of our Eastern brethren. That much good may

arise from the discussion of this vital subject is the wish of the
RAMBLER.

[This is a most practical question, and we should be glad to have it thoroughly discussed. Yes, yes, let's have co-operation. If an exchange has proven to be a good thing for fruit-men, why not for bee-men?—Ed.]

THE COWAN EXTRACTOR.

ITS HISTORY AND NAME.

By J. F. McIntyre.

On page 368, GLEANINGS, 1890, I called attention to the Cowan principle of making a two-comb extractor, and recommended the baskets in preference to the non-reversible Novice, but not in preference to a four-comb reversible machine. On page 841, GLEANINGS, 1889, I say, "After trying all sizes up to eight combs, I would take a four-comb in preference to any other size, at the same price." I am still of the same opinion for a hand machine; but for power I would have at least eight comb-baskets. With regard to your four-comb Cowan, there is not a single idea about it that is Cowan's. I can not say who first originated the idea of putting a sprocket-wheel on the axle of each basket and making all turn at once; but I think I made the first extractor that way myself, as a modification of Mr. Squire's extractor (see page 841, 1889), in Jan., 1887.

When A. I. Root was in my honey-house on the 3d of Dec., 1888, I showed him this extractor. He asked why it wasn't a good idea. I said it was, and that I preferred it to the extractor that reversed by the crank. This four-comb machine is the one that I recommend in preference to the two-comb Cowan; and whether the idea came from my honey-house, or originated with some one else, the proper one should have the credit, and not Cowan. I have heard quite a number of bee-keepers say that there was not a single idea of Cowan's about this extractor.

Fillmore, Cal., Apr. 23.

[The first Cowan extractor was made in 1875, by Thomas William Cowan, editor of the *British Bee Journal*; but nothing was done with this principle, in this country, we believe, until 1887 or '88 when we made a machine to try. But it was not until November, 1891, that we made them for the market.

After reading your article on page 841 for 1889 we saw that your idea of reversing by means of levers was practicable. Shortly afterward it occurred to us, as we were thinking over this extractor, that a sprocket-wheel and chain would be cheaper, and we accordingly made a rough draft of the machine. Although A. I. R. saw your machine, he said nothing of it on his return home, nor at the time your article appeared; and "the boys," not knowing any thing about what you had done, treasured up the sprocket-wheel idea, hoping, in the near future, to make some experiments and put machines on the market. It was not till Jan-

uary, 1892, that we made one to try, and it was some time later before any were sold.

By carefully re-reading your article we see that you outlined a modification of the principle, at the top of the second column on page 841, 1889, as it was used by Mr. Squire. As many of our readers may not be able to refer to this paragraph we reproduce it here.

Mr. Squire, of Santa Barbara, Cal., came out with a very simple arrangement for reversing the comb-baskets all at once. He made some hard-wood wheels, about three inches in diameter, with two grooves around the edge, and fastened them securely on the axles of the comb-baskets; then put a screw in the edge of each wheel between the grooves, directly under the basket; then a wire was passed from one wheel to another, going around each wheel once. When it came to the screw it was wound around that to keep it from slipping. This acted like a belt; and when one basket was turned, all turned.

The wires Mr. Squire used, and the wooden wheels, would hardly be practicable or durable. Well, after selling the Cowan two-frame extractors for a year or so, there came a demand for the four and six frame. Realizing that it would be impracticable to move individually each pocket of the four and six frame machines, the sprocket-wheel-and-chain idea seemed the most feasible plan for moving all the pockets by simply turning one.

It is true, as you say, that this principle is not Cowan's; but it is adapted to Cowan comb-pockets, Cowan gearing, Cowan extractor-cans, as they appear in the two-frame machines we had been previously selling. The two-frame had previously been called the "Cowan Rapid;" but as a new principle was introduced in the four and six frame it was called "Cowan Improved Extractor," and this is the name that has been stenciled on every machine sold. The name "Cowan" was retained because many of the features of the two machines were used, and the word "improved" would suggest the change in the method of reversing; but unless somebody can get up and prove prior date, you are probably the first one to use the sprocket-wheel and chain. So far as "the boys" are concerned, they were original in its use—that is, they had no knowledge of any one using it before.—Ed.]

SPREADING BROOD.

A RULE THAT WILL ALWAYS WORK; THE VALUE OF YOUNG QUEENS.

By Rambler.

Your advice to Mr. Chapin, on page 282, in relation to spreading brood, leads me to review the matter as I see it, and give the experience I have gained both here and in the East.

In the first place, I think the bee-keeper can so manage his bees, especially in this climate, that there may be no necessity for the spreading of brood; and the bee-keeper should try to advance to that point in his management, so as to dispense with this extra manipulation. The conditions necessary for the non-spreading plan is, to have young and prolific queens in every hive; not a queen over two years old, and not a queen that stops short of keeping ten frames filled with brood. Another condition, highly conducive to the same end, is to leave the colony with an abundance of honey in the fall. We sometimes have hives nearly if not quite honey-bound; and while I would not advise quite

such an overabundance of honey, I should prefer to err on that side rather than to have a condition of short rations; for what is there more encouraging for early brood-rearing than several frames of sealed honey in the hive?

A condition of a good supply of pollen is also necessary; and I condemn the practice of cutting out pollen-laden combs in any locality, as some do, for that pollen is just what the bees want for early brood-rearing. With the foregoing conditions in this climate, I think there would be but little necessity for the spreading of brood; for by the time honey is secreted in quantities enough to gather, there would be bees enough reared to secure it. If, however, the conditions above are not complied with, or in cold climates the colony becomes reduced in numbers, the spreading of brood will greatly hasten the accumulation of bees.

You say, in reply to Mr. C., that "it is impossible to give a rule that will hold good in all cases." I think my plan will cover nearly if not quite all the cases that are ordinarily met.

Mr. C. says he wants to spread his brood Apr. 1st, or as soon as they have two frames of brood. If said two frames of brood are only larvæ, and just sealed, the spreading of them, in a majority of cases, would result disastrously, even here in California, not saying any thing about colder Michigan. The spreading of three frames, and inserting two empty ones, would also be hastening things too fast, and also result disastrously.

The surest way is, to make haste slowly. If the brood at any time does not fill out to one end of the frames, the reversal of one or two will do away with that evil. When the frames are filled from end to end, and have quite an amount of *hatching brood*, it is then safe to commence to insert empty combs between the brood. It is quite safe to wait until there are two frames of hatching brood and a frame of eggs and larvæ. If Mr. C. spreads his brood as he states it, there are several chances that he will ruin several colonies. It would certainly be an exceptional season, and the colonies extra strong in bees, to allow it. The learner will heed the lesson all the better, though, by losing a few colonies. That is the way the go-slow plan was learned by the

RAMBLER.

A CARD FROM MR. COWAN.

I see in GLEANINGS, page 195, you allude to my letter. I think I can explain to you the apparent discrepancy in the volumes, and why the names I mention do not appear. There is no doubt in my mind that it is the same work, and that yours is a later edition. The work was brought about in this way: Sir W. Jardine, who was a naturalist, decided to compile a series of volumes dealing with different animals. With this object in view he engaged the best men in the different branches. The subject of Entomology was taken up by a Mr. Duncan.

The special subject of bees, of which Mr. Duncan knew very little, was put into the hands of the Rev. Mr. Dunbar, who was a practical bee-keeper, and wrote the book anonymously. He is referred to as the clergyman, in the preface of the first edition, without his name being mentioned. This edition was issued in 1840, and formed Vol. VI. of the "Naturalist's Library." It was printed in Edinburgh, and published by W. H. Lizars, and in London by S. Highly and by W. Curry, Jr. In 1850 the Library was re-arranged, and the London publishers changed to Henry G. Bohn, York Street, Covent Garden, the Edinburgh publishers being the same as before—namely, Lizars. In this edition the advertisement of the publishers is omitted, and that is why even Mr. Duncan's name is not found in your book. The re-arranging of the Library necessitated a change of volume, and this volume on bees became Vol. VII., Insects, reprinted in 1852 and in 1859. It also became Vol. XXXIV. of the whole series. Since that time the book has been reprinted, without date or number of the volume.

I hope this explanation will clear up any difficulty there may have been. I have, as I stated, several editions of this work, and, having known the Jardine family, I happen to know more about the book than most people.

London, March 28. THOS. WM. COWAN.

CALIFORNIA ECHOES

By Rambler.

Mr. Pryal, in *A. B. J.*, upon the California poppy, and my Echo on the same subject, show that there is nothing too small for great minds to consider.

Sheep are quite destructive to honey-pasturage; but goats will utterly ruin it. They eat down the sages; and what they can not eat, they trample down. Goats and the bee-business can not work harmoniously together.

Dr. Mason, when you have another World's Fair on your hands, and a band of those stalwart Canucks after you, just send to California for our improved Canadians. We've got 'em here that will make those old Dominion fellows' heads swim with their stories.

It has always been a mystery to me why goats were used in Bible lore to represent evil, and placed over perdition. The mystery is now solved. I passed a goat-corral on a rainy day, where several hundred were huddled together; and, to make a long story short, they stink.

There is a prospect for our State Association to hold a special meeting in San Francisco during the midwinter fair. It will probably be held in the latter part of June. Bee-keepers intending to visit the fair will govern themselves accordingly. We shall have more to say about it later.

There are 49,000,000 acres devoted to raising 65,000,000 tons of hay, worth \$507,000,000. Dr. Miller, you deal in so much straw perhaps you know something about this hay business. Why don't you hold hay conventions? Are you afraid they will see hay seed in your har—hay, hay, doctor?

We remarked a while ago that one honey-producer here produced more money than the whole State of Vermont. From the scarcity of rain up to the present writing, and the long visages borne by bee-keepers, I shouldn't be surprised if one Vermont bee-keeper would produce more than the whole State of California.

Those Ontario Canadians and others boast that there's no wind in Ontario. Oh, no! nevertheless, a house in the suburbs of the town is propped on all four corners. Come to think of it, that house was in Claremont, Prof. Cook's new home. Well, Claremont and Ontario are so near each other that we will put them all together.

Willie Atchley, somewhere in a back number, says that bees do not remove eggs and place them in queen-cells. Last season I noticed in a hive a partly built queen-cell. There was one egg in the cell, which was in the extracting-super, above a queen-excluding honey-board. Not another egg in the super, and the queen was below. Query: How did the egg get there unless carried from below by the bees?

HEDDON FURTHER REPLIES.

On page 335 we gave a brief synopsis of an article sent in by Mr. Heddon; but the latter feels that he should be allowed to speak for himself. Wishing at all times to do him full justice, we have decided to publish the article in question. To this we make no reply because we do not desire to prolong the matter any longer than is necessary.

Dear Mr. Root:—As it seems to me your footnotes are unjust in their inferences, and neglect to touch the principal arguments of my article, I desire to refer to the matter again.

Your first sentence regarding "those who have purchased honey of me before" is not fair, because I did not refer to persons who purchased honey of me "before," but to those who purchased at the same time, and both before and after, and out of the same lot of that shipped to Mr. Willard and others. You publish an entire copy of a postal card from one G. F. Ayers. I do not remember Mr. Ayers; and while it would not be strange that I might forget a customer, I have been back over my alphabetically filed orders for 1891, '92, '93, and '94, and I can not find the name. But I am glad you published Mr. Ayers' card, because it places you under honorable obligation to publish reports from others of my customers. You asked how about honey that I shipped before 1893 and '94. I have never shipped *any* adulterated honey to *any* one; but your asking this question is *prima-facie* evidence that you are not depending on chemical analysis, but hearsay, for your suspicions. I have been apprised of

the source of your fancied evidence. You asked me to state "what in the world bee-keepers are to do." The answer seems to be plain—do the best we can. This brings us to the real point at issue—the point I first began to discuss at our State convention, and which discussion you assumed to be a defense of adulteration. If you do not agree with me, that making arrests of members of any class of honey-dealers, whether it be city dealers or producers, will not stop adulteration, and thus do no good, but through newspapers destroy the reputation of our product in the minds of consumers, why don't you arrest some one? Two arrests have been made in Ohio, and in both cases, I am sure, the arrested parties were innocent. I might have concluded that my honey had been removed, and other, which was adulterated, placed in the cans, were it not for the fact that I had been and am now quite certain that the chemical analysis of the day is a combination of honest error and conscious inability, as proven in the Jankovsky case. Certainly I was well aware that the Fish honey was pronounced slightly adulterated with sugar and not largely mixed with glucose. I thought of all this. But you do not seem to see the point. The point is, that, *notwithstanding* the fact that "it was sugar adulteration," and "very slightly," and "such adulteration very difficult to determine," the chemists and the court officials hesitated not, but have secured their fees, and Mr. Jankovsky is some \$75.00 out of pocket, and henceforth can never stand up in court and say he never was arrested and convicted. Not only his reputation but also his business has been damaged. In your endeavor to lift up Mr. Fish with your lever, GLEANINGS, using me for the fulcrum, it seems to me you deal a terrible blow to courts and chemists. Although the chemists were not able to tell, they either didn't know they were not competent authority, or else they had no respect for the rights of the citizen. My former reference was nothing more nor less than to show that the present science of chemistry is now convicting and fining innocent people, and no amount of explanation as to how their errors came about changes the force of my citation.

I next come to your statement as to what I would have seen had I "been to the Washington and Chicago bee-keepers' conventions, when Prof. Wiley was warmly welcomed by bee-keepers." I wish I had been there. I should been able to say, "I am glad to meet you, Prof. Wiley. I beg of you to remember that you are now shaking a consistent hand; I never called you a 'liar.'" Prof. W., let us sympathize with each other; we have both been attacked by bee-journals. You are back in the "bandwagon," please instruct me as to how you got there!"

I did not call Prof. Wiley a "liar," but I said he either was one or else he was at one time worse abused by bee-journals than I am being now.

I now come to the point of your having honey in cans, and the cans in boxes, and the cover of the box having tacked upon it one of my express tags. I do not doubt it, because I put them on that way—an easy way to imitate. The tag is no doubt mine; but if it is nailed upon my cover, that cover resting on my box, that box containing my can, the honey in that can is not my honey provided it is not pure and of first quality of its grade. (By this word "my," I mean having once been mine.) I now mail you a sample of my pure honey, the same that I shipped to all my customers, and I desire that you compare it with the honey in those cans, and then return to me a sample of that in the cans you have. You can return in the

same mailing package, and I enclose stamps for postage. Also please state in GLEANINGS how they compare.

In your next paragraph you bring into public print what you claim I wrote in a private letter to some one. I do not remember to whom I wrote such words. I may have done so, however. We will admit that I wrote these words in a private letter to some person. Of course, we all know that Prof. Cook is far from being a "fool," or "silly," and that it requires nothing short of genius bordering upon the "consonant" to make so much of a seeming case against me as you have done, with nothing real for a groundwork. If I wrote those words, I am sorry for the mistake, and must give as my only excuse that I then had what I now have in my mind, the thought that it is both silly and foolish to hope for general benefit to bee culture to grow out of the persecution of honey-producers. On the other hand, if the object is *not* to benefit bee-keepers, but to temporarily injure a competitor in business, "foolishness" immediately changes to conspiracy. However, speaking of your not sending me proof, I see no logic, nothing wise and just, in retaliating upon the "weak," "foolish," and "criminal," by withholding *justice* from them. I very much admire the following quotation from a prayer: "Lord, bless the wicked; thou hast blessed the good by making them good." I have not said that the chemists of our land are all ignorant and vicious, although we all know enough of mankind to know that chemistry, perched upon a good salary, and well obscured from the masses, is not necessarily always perfectly honest nor all-wise. We know one man has been fined heavily, and immeasurably injured, through either the ignorance or vice of chemists.

You say you have enough of my honey that speaks for itself, to go around. I say you haven't enough of my honey to support one bee 15 seconds, that, sent out as samples, would not do honor to me as a producer and to our business at large. I mailed samples to many of my customers, and I do not remember of a sample sent that did not bring an order. If there are any of my customers who will say the goods were not like sample, I want to hear from them through GLEANINGS; but if such statements should be made, I want to know, as I do in the case of Mr. Ayers, why nothing was said to me; and I further desire to have about forty of my other customers state what they think of my honey, in GLEANINGS.

By re-perusing the Fish-honey advertisement, I find it reads as follows:

We offer you honey, put up in original packages, as received from the apiary, at from 4¼ to 6 cents per lb., depending on quality and style of packages. Can sell you any quantity you wish, from 60 lbs. to a carload. Samples mailed if so requested. Will thank you for a response.

Resp'y yours, S. T. FISH & Co.

Above the above, on the card, is the following:

We are agents for the Bee-keepers' Association, and any honey we sell we guarantee strictly pure and unadulterated.

The wording of this card exhibits confusion, and that the firm is already on the defensive, does it not? Mr. Fish is a scholarly man of business wisdom; and the way this card flutters, we would know that not only the firm but their customers had been hit. "From 4¼ to 6 cents," even in "60-lb. lots," "Cheap." Is this honey (two cents below the lowest of my prices for the same grades) adulterated because it is cheap, or cheap because the word "adulterated" has been published too many times?

Your references to the test to which chemistry

has been put are not at all conclusive to me. The tests should be made by persons on one side who will, for the time being, lay aside all desires as to results. I am well satisfied that there are honeys, pure from the blossoms, that, under chemical test, will answer the chemists' requirements for glucose, and I have no doubt it can be proven by honest experiment. I was a witness to one glucose experiment at Lansing—one which has been cited as a case proving the ease of detection. A portion of reddish honey was divided into three parts—a small part, medium part, and a larger part. White confectioners' glucose was mixed with each, and the shades of color afforded an unerring guess; for, when brought in, we were told that one lot of honey was mixed in different quantities, with equal amounts of glucose. I wonder if all the other tests were as severe as this one. And this test has been cited in your paper to show the ease of detecting glucose by taste. The glucose we have tasted in our confectioners' shop here has no taste at all that the aromatic flavors of honey will not annihilate at once. I tasted of the Lansing experiments, and could unerringly tell, by appearance and taste both, which had the most glucose (the less of flavor being most diluted with the comparatively tasteless.) I know that I have tasted pure honeys that I could not tell from any one of these glucosed samples. If others could, I could not; but I could unravel that experiment with greatest ease. When the chemist is *really* tested, we shall then know whether or not his reports are competent to fine and send people to jail, or what is worse, to public disgrace. I am far from having a desire that present chemistry can not detect glucose in honey with sufficient certainty to warrant conviction; but, fully believing it to be true, I have a stronger desire that no more honey-producers should be persecuted and injured while all bee-keepers are also materially damaged.

Your statement, that my utterances have defended the practice, are wholly unfair. That is another disputed question, I maintaining that they do not defend the practice, and asserting positively that such was far from my intentions. While I said that bee-keepers' unions could not stop one little honey-producer, the idea I wished to carry was that they can not stop the practice with anybody. What harm can it do for me to make this statement to bee-keepers when the city adulterators (all the adulterators there are) know it full well beforehand and after the Union has previously, for a whole year, admitted it by its non-action. When it was first proposed to put this load upon the Union (an offspring of my own, and to which I am greatly attached), I objected because I thought it would weaken and destroy the already proven efficiency of the Union in the line of work for which it was originated, and I think so still. What better evidence of my original statement, made at the time I opposed the change in the constitution, need I adduce, than the fact that more than a year has passed, and the Union board has proven by its actions that it dare not even test the truthfulness of my assertion. Had I been Mr. Jankovsky, and had I been arrested and fined by any pure-food commission, bee-keepers' union, or any one else, it would cost such commission or union or person a very large sum before they were through with me. The logical genius of law is a very different thing from the prejudices of those who persist in the adulteration cry. We do not differ, and never have differed, upon the right and justice of adulteration; you have only made it *appear* so; we differ greatly as to policy of action, and we do

not come any nearer to the real point at issue, because of the malicious prejudice growing out of your misunderstanding or misrepresenting the true state of affairs. This is the way it seems to me. Suppose we discuss the real point at issue, as to what is best to do and not to do, leaving personal allusions out of the case for a while, or, at least, placing them on another page.

Finally, since you have begun publishing contributed evil words concerning me, are you willing to publish several letters I have, stating, with gloves off, what the writers think of you? If you will open a column for innuendoes against you and me, you may come to the conclusion that both may be loved for the enemies we have made.

JAMES HEDDON.

Dowagiac, Mich., Apr. 2.

[The following is a copy of an affidavit sent us at the same time.—Ed.]

I Charles Heddon, son of James Heddon, do hereby swear that I took from the hives in my father's two bee-yards, and in his honey-house did extract all of the surplus honey produced in said yards, during the years 1892 and 1893; and, further, that I put all of the said honey into sixty-pound boxed tin cans, and superintended the shipping of nearly all of said honey. That I personally took from the hives, extracted, placed in cans, and shipped all of the 18 cans of honey sent to Mr. George G. Willard, of Cleveland, Ohio, during 1893, and to my certain knowledge all of said honey was free from any adulteration.

CHARLES HEDDON.

Subscribed and sworn to before me this 4th day of April, A. D. 1894.

ABNER M. MOON,

Justice of the Peace in and for Cass County.

[In addition to this we expect to allow Mr. Heddon reasonable space for reply to the two editorials—one on page 335 and the other on page 382, in next issue. If we attach no footnote this will give Mr. Heddon the "last say," and certainly all that one could ask for. We desire that Mr. Heddon shall have a full chance to vindicate himself, and toward this end we publish a letter received that will explain itself.—Ed.]

One year ago this last winter my stock of extracted honey gave out. So I sent an order to Heddon for two cans of his amber honey. I want to say that I never had any honey that gave better satisfaction than this. My customers were well pleased with it, and they had been using clover and basswood honey from my own bees.

EZRA G. SMITH.

Manchester, N. Y., May 2.

[Here is another which we also take pleasure in inserting here, even though it speaks more highly of Mr. Heddon's honey than of our own.—Ed.]

Friend Root:—I desire to say to your readers that I have purchased honey from Jas. Heddon, at different times during the past eight years, and I have never produced nor seen a superior article of extracted honey, nor sold any that gave better satisfaction to my customers. Perhaps you may remember that I have purchased from you extracted honey of the same grade, and at the same price, and truth compels me to say that, according to my taste, and that of my customers as well, Mr. Heddon's is very much better. I am perfectly satisfied that the honey from each of you was pure; but I am also certain that the differentiation Mr. Heddon speaks of in his article is not true only, but greatly in favor of his locality.

L. B. BELL.

Brecksville, O.

the bees will soon commence to starve, unless they are fed. This will be rather unprofitable, since the bee-keepers got such a low price for their honey last year. Up this way there is some chance of getting an average crop; besides, it will be of better quality than it usually is. I think the time is not far distant when the upper portion of this State will be the *bee section*. There is never a failure of the rainfall in many of the northern counties. If you ever read the admirable articles John Muir, who lives in the adjoining county, had in the *Century* some 12 years ago, you will remember that he likened the vast extent of honey-flora in some of the northern counties, especially, I believe, in Shasta, to a grand beegarden. Harbison, some thirty odd years ago, predicted that the mountain regions of this State would be the great honey-yielding sections. At that time the honey or sage districts of the south had not been discovered. While the largest yields may be obtained in the lower counties, still, one year with another, the northern counties will, I think, outdo those at the other end of the State. I saw some very fine honey from Shasta County at the midwinter fair. Twenty or so years ago, the honey from the Sacramento Valley was the leading honey of the State. I notice that it is again coming to the front. There is a sure crop along the river every year, as the bees gather the nectar from the countless acres of overflowed land along the rivers and sloughs. Most of this honey is rather dark; but then, it is of good flavor, and in a dry year it brings more than the beautiful white sage honey does in a year of plenty, like last year, for instance.

North Temescal, Cal.



THE STEPHENS FRAME-SPACER.

SOMETHING THAT CAN BE ATTACHED TO OLD-STYLE FRAMES ALREADY IN USE.

By George W. Stephens.

I have been requested by the editor of *GLEANINGS* to write an article for publication to accompany his illustrations descriptive of my new and improved spacer for hanging frames. The illustrations show the device in detail, and I hardly think a written description would add much information, because I imagine any one will see at a glance just what they are and what they are for.

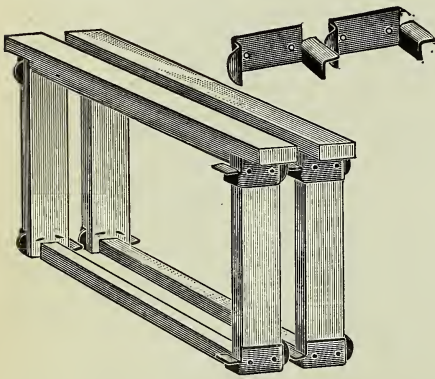
Some years ago, when I began to keep bees, I used loose hanging frames, and I found it almost impossible to get straight combs, from

HONEY-CROP IN CALIFORNIA A FAILURE.

By W. A. Pryal.

The honey crop in this State—that is, in the southern portion—is doomed to nothingness this year. There is evidently going to be an entire failure. I have advices from there that

the fact that, no matter how particular I was in spacing the top-bars with my fingers, by guess, the frames would not hang straight, and the bottom-bars would be out of plumb, some being close together and others far apart. The consequence was, the combs would be correspondingly out of shape—the cells on one side being built too deep and on the other too shallow. I tried several methods to remedy this, but none proved satisfactory, until one day, about two years ago, I had the fortune, or misfortune, to be forcibly struck with a sudden idea. That settled it, and my spacer as illustrated here is the result of that idea; and it has not been changed in any particular from the original idea that I was "struck" with. I immediately made some of them, and showed them to every bee-keeper whom I met, and, without exception, they pronounced the device a good thing. Thus encouraged I concluded to have it patented, and my letters patent bear date Feb. 14, 1893.



I presume there are thousands of bee-keepers who are still struggling with loose hanging frames, who would be glad to change to a fixed frame, but are deterred from doing so on account of the expense. It will readily be seen that these spacers can be easily affixed to the frames they now have in use, at a nominal expense. I am not prepared to say how cheaply they can be made, as I have not invested in any machinery for their manufacture, and do not know what they would cost; but it is reasonable to suppose, from the cheapness of the material of which they are constructed, the number in a pound (80 to 85), and that they can be stamped out very cheaply with suitable dies, that they can be made and sold at a comparatively low price. I have made 10 or 12 pounds of them by a slow process, partly by hand; and, although they are not as perfect in shape as machine-made ones would be, they are nearly so.

The spacer is constructed of No. 20 $\frac{3}{8}$ band steel, which I find is strong enough for all practical purposes. The pieces are cut of sufficient length to allow one end to be bent inward about

$\frac{1}{4}$ inch, and then outward $\frac{3}{8}$, the projecting vertical edge being cut circular. This flange being circular there are no corners to catch, and the frame slips into its place in a surprisingly easy manner, and without jar. The other end is bent inward $\frac{1}{2}$ inch, and then cut and turned downward to the middle where it is cut off, leaving a horizontal flange $\frac{1}{2}$ inch wide, and projecting $\frac{1}{8}$ of an inch. These are nailed to the end-bars at the four corners of the frame, the two at one end with the circular flanges pointing one way, and the two at the other end pointing the other way, like two persons going around the same way in a circle and stopping at opposite sides; they would then face in opposite directions. The end-bars are to be just 1 inch wide; and as the projections on either side of the end-bars are $\frac{1}{8}$ of an inch, the spacing will be $1\frac{1}{2}$ from center to center; but they can be made to space a greater or lesser distance by having different-sized dies.

As will be seen, when these spacers are affixed to the frames in the hive, the projecting flanges (one being vertical and the other horizontal) cross each other, thus affording the smallest possible contact between the frames, and preventing the bees from gluing the frames together; in fact, it will be impossible for them to do so to any appreciable extent. The horizontal flange is made $\frac{1}{2}$ inch wide. This allows a play of the frame endwise nearly $\frac{1}{4}$ of an inch without the flanges slipping by each other and becoming interlocked. However, I would recommend that the bottom-bars be made so as to project at the ends $\frac{1}{4}$ of an inch, the ends being reduced to a point, or a round-headed nail be driven in, or, what I consider better still, a staple-tack driven into the ends of the bottom-bar, projecting $\frac{1}{4}$ of an inch, with the head vertically disposed. This makes an excellent guide to the frames, and facilitates handling them; in fact, if the bee-master should be so unfortunate as to get stung in the face, and his eyes become closed, he could still manipulate the frames without any trouble, and get each frame in its proper place. Any frame in the hive can be removed and replaced without disturbing any of the others, if the combs are straight, and it is very easy to have straight combs with proper spacings at fixed distances. Also, any frame may be turned end for end, or it may be taken out and shifted to any other part of the hive, and the gap closed up by sliding the frames along the rabbet, and it will still fit. Frames may be changed from one hive to another, or from the extracting-supper to the brood-chamber, and they will always fit just where they are wanted.

For bearings at the sides of the hive, I use double-pointed tacks or staples, preferably $\frac{1}{2}$ or $\frac{3}{4}$ wide, driven in and allowed to project $\frac{1}{2}$ of an inch. These are so disposed at the corners of the hive horizontally and vertically that they must meet the corresponding flanges of

the spacers crosswise, the same as the flanges meet each other.

Denison, Ia., March 21.

[When friend S. sent us samples of his frame-spacers we were convinced that they had merit enough to warrant a description in this department. The particular feature of them is, that they can be attached to old frames already in use. Some of the good things Mr. Stephens says of his spacers are also applicable to the Hoffman. Now, you may ask, "Which one do you prefer?" The Hoffman, because metal spacers are and have been more or less unpopular, and we like to have the frames stick a little so as to be always ready for moving. But here is what friend Z. T. Hawk thinks of them.—Ed.]

Ed. Gleanings:—Undoubtedly fixed frames have come to stay. Of these, three classes are in common use—open all round, wholly closed at the end, as the Quinby, and partly closed at the end, as the Hoffman. To one just entering the business of bee-keeping, I doubt very much whether it makes any great difference which one of these styles he adopts; but the apiarist who has a large number of the old-fashioned suspended frames in use has really little choice in the matter if he would avail himself of the advantages of fixed frames. Unless he replace his old frames outright with new ones, at great sacrifice of time, labor, and money, he must adopt some automatic spacer that can be easily attached to the frames he already has in use. There are several of these spacers, of more or less merit; but my old friend Mr. G. W. Stephens, of Denison, Ia., seems to have hit upon a little device of this kind that leaves nothing further to be desired. It has the triple merits of cheapness, simplicity, and effectiveness. It can be attached to an ordinary suspended frame in a few moments, without disturbing or mutilating the comb; and if the bee-keeper wants a suspended frame with all the "swing" taken out of it he can nail one of these little pieces of metal to each corner of the frame, and haul his bees over the roughest roads without additional fastening. I have not the remotest financial interest in the device, and only desire to call the attention of brother bee-keepers to what I consider a meritorious invention.

Z. T. HAWK.

Vail, Ia., March 19.

[We might suggest that it would be cheaper and perhaps just as good to have the spacers only at the top. Just now it strikes us we should prefer them so, to having them at the bottom also. Spacers at the bottom of the frames always bother more or less in removing and replacing.—Ed.]

SYRUP FROM A PERCOLATOR A SUCCESS.

I have tried Dr. J. T. Beall's plan of making simple syrup, as described on page 236. I find it works very satisfactorily, and gives a syrup that suits the palate of man as well as bee. Try it on some nice rolls, and see.

St. Louis, Mo.

P. R. WAGNER.



QUEENS CRAMPING.

Question.—Do you ever have queens go into a spasm, or cramp, when catching them to clip their wings, or for any other purpose? I wish to clip the wings of my queens this year, but a friend tells me that they often have cramps, and die, while this is being done. Knowing that you clip the wings of your queens, I write for information.

Answer.—Several years ago this matter of the cramping of queens while being clipped was brought up; and it was claimed at that time, as your friend claims, that when queens would so cramp they would die. At that time I did not believe that a queen ever had a cramp from being caught, or ever went into a spasm from such a cause. I have seen scores of queens in the condition which I supposed others called having a cramp, some lying that way from five seconds to two minutes, and always found such a state of affairs to come about in this way: When a queen is caught by both wings so that she can not get around to catch her feet on the fingers she will often curl up her abdomen, opening the vulva at the same time, and, while in this position, catch one of the front feet in the vulva, which at once closes, feeling the foreign substance there, thus holding the foot fast and doubling them up in a little round ball, like a caterpillar. Sometimes they will lie perfectly still like this for two minutes after the wings are clipped, on top of the frames, when all at once they will open the vulva, take out the foot, and run down between the combs as if nothing had happened. I have had them do this several times when putting them up for shipping, but not so often as in clipping; but in all these cases I never could see that the queen was injured in any way whatever.

However, a short time ago I had an experience different from the above, and the only thing of the kind I ever witnessed. I caught a queen very heavy with eggs, to clip her, catching her by all four wings. She doubled up, as above given, caught her middle leg on the right-hand side, as her back was toward me, in the vulva; and when I cut the wings she rolled down among the bees between the frames, lodging about one inch below the top-bars. I marked the place where she was, finished the rest of the manipulation of the other combs as I desired, when I blew a little smoke over the marked place, and, when the bees had run away, there was the queen all doubled up in a little round heap, apparently dead. I took out the combs again, opening very carefully this space between the combs, where the queen was, so she should not fall too rapidly to the

bottom of the hive so as to injure her by the fall, when I picked her up off the bottom and examined her closely. This revealed that she not only had the middle leg in the vulva, but that both of the sharp claws of the front foot on the same side were caught under the fourth segment, or horny scale, of the abdomen. I had no difficulty in liberating the foot from the vulva, as the queen was now, so far as I could see, lifeless, not moving or stirring any part of the body, leaving legs, wings, etc., just where I placed them; but when I came to try to get those claws, or nails, of the foot, out of their place under the segment of the abdomen, it was a very difficult undertaking, for they were about as fast as in a vise. With great care I finally liberated them, straightened the queen out in the palm of my hand, and pronounced her dead. All who have lost a valuable queen can imagine about how I felt at that time, as this queen was one I had lotted on for the present season's use. I laid her down on a part of the hive, wondering what I should do about the queenless colony, when she opened her vulva and ejected several eggs in rapid succession. I now placed her where the bees could have access to her, and, after ridding herself of some twenty or thirty eggs, she put out her tongue to the bees, and was fed, still lying on her side. After being fed she got up, took some more food from the bees, walked feebly, at first, over on top of the frames, then across the tops of several of them, and finally down into the hive, coming out all right. She was apparently dead for at least fifteen minutes, and from three to five minutes in recovering after she showed signs of life. Was this a spasm or cramp? and have any others had a like experience? But it is not necessary to catch queens to clip them, although I generally do so. With a pair of A. I. Root's scissors, for this purpose, and the hand holding them kept very close to the back of the queen as she travels over the comb, waiting till she puts her head in a cell for the final movement, the wings can be clipped without the queen even knowing she has been touched. Keep the scissors open, and very close to her, or you will lose the opportunity while her head is in the cell in making ready. A little practice will make perfect.

REMOVING BEES FROM SHIPPING-CAGE.

Question.—Is it better to remove the accompanying bees from the shipping-cage before trying to introduce the queen, where the Benton cage is used?

Answer.—Dr. Miller like, I feel like saying, "I don't know" to this question. Years ago I should have said yes, and very many of our best bee-keepers say, "Never try to introduce the accompanying bees with the queen; for if you do, the life of the queen is endangered in the slaughter of these bees, which happens in nearly every instance." This is just as I used

to feel; but after having gotten the queen, and apparently all the bees with her, introduced safely scores of times, I have about come to the conclusion that the old ideas along this line were faulty. However, the trouble of removing these bees is all there is against doing so, as the queen will be received by the colony equally well without them. It is far easier to place the cage, just as it comes from the mails, on top of the frames, than it is to open it, get the bees out, and the queen back in again.

INTRODUCING IN SWARMING SEASON.

Question.—Which is preferable at time of swarming—to introduce a queen to the swarm, after having removed the queen going with the swarm, or to introduce her to the parent colony, after having cut the queen-cells?

Answer.—I should say neither; for in the first case the bees will be almost sure not to be satisfied with the queen given them in place of their own, when a general going-back to the old hive will be the result; while if given to the parent colony without removing it to a new stand, so as to make them feel very poor through great loss of field-bees, they will be almost sure to kill the introduced queen and hold to the brood they have which is still convertible into queens. Bees having the swarming fever accept a queen far less readily than at any other time during the season, or under any other circumstances. At least, this has been my experience.

WHEN TO INTRODUCE.

Question.—Which is preferable in requeening—the swarming season, after the main honey-flow, or in the fall when there is but little brood?

Answer.—Just after the main honey-flow, other conditions being the same. From years of experience I have found that more queens are superseded just after the basswood yield of honey than at any other time of the year; and at times when the bees seem willing to supersede queens they seem equally willing to accept a new queen in place of their own. Three-fourths of the exchanging of queens which I do is done at this time.

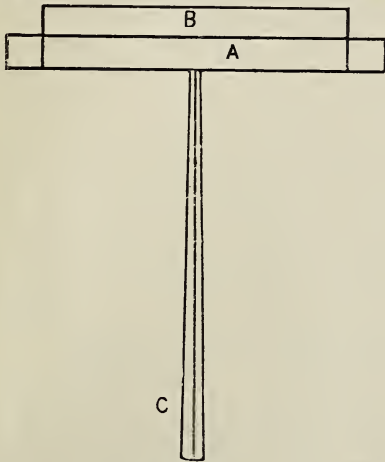
[We never supposed that the feet had any thing to do in causing the cramps, though it is possible. At all events, we have never observed that the feet were caught in any way while the abdomen was curved up. At first we concluded that such cramped queens would never recover; but later observation has convinced us that, if not put back in the hive, they will generally, if not always, straighten out if given time enough—say four or five minutes. We had about come to the conclusion that the extraordinary curvature of the queen's abdomen when picked up by the wings caused the segments to become temporarily stuck by being folded in against each other. This is only a surmise, however.]

As to whether the accompanying bees shall be removed from the queen before introducing, we have also come to the conclusion that it makes no difference whether they are or not, and hence we always leave the bees with her.—Ed.]



ANOTHER COMB-LEVELER.

I inclose a sketch of what I call a comb-leveler for comb in sections. The following is a description. The bar A is a $\frac{1}{2}$ -inch bar of



iron, square, and 5 inches long. B is a piece of steel fastened to the bar A. The operation is as follows: The implement is warmed on a stove, or by other means. It is then handled by the handle C; the steel B, being warm, and placed in the section, cuts off the required amount of comb from each side of the section.

CYRUS C. ALDRICH.

Morristown, Minn., March 19.

[We see no reason why this device should not work. It is simple and cheap, and can be easily tested. Whether the idea itself of leveling combs down in sections so as to get better section honey belongs to Mr. B. Taylor, we can not say.—Ed.]

WHAT IS HONEY-DEW?

In an article in *Bienen-Vater*, Jul. Steigel insists on a clear discrimination between plant-louse honey and honey-dew. Not only that, but he insists that there is no such thing as plant-louse honey gathered by the bees. Close observation will show that, where plant-lice are at their work, wasps or other insects may be in attendance, but never bees. Bark lice, or scale lice, are a different thing. The result of their work is an entirely different product. Located, not on the leaves, but on the twigs and tender bark, the scale lice cause the sap to run, far beyond their ability to consume it, and, once started, it continues to run for weeks. This the bees gather, and there is nothing repulsive about it, any more than there is about the sap gathered from maple-trees. At times it is a great benefit to the bees, the main drawback being that such honey is not good to win-

ter on. If I remember rightly, Prof. Cook told us something about the two kinds at one time, but I don't remember to have ever seen the statement that bees never gather the exudations of the aphids. If Mr. Steigel is correct, it is well to have the fact known.

Marengo, Ill.

C. C. MILLER.

[The idea that scale lice do not secrete themselves, but cause the twigs to secrete, what we sometimes call honey-dew, is a new idea. We hope it is correct; for if so we can stomach the product a little better. Will Prof. Cook please let us hear from him on this point?—Ed.]

A PLEA FOR SHORTER APICULTURAL TERMS.

Friend Root:—You "prefer catalog to catalogue, and program to programme." That is good common sense; so it seems to me, at least. Now why not say "floor" for bottom-board, and "queen-bar" for "queen-excluder." Just try queen-bar one week in your apiary, in the busy season, and I am pretty sure you will not backslide to "excluder." Bar is short, and easier, and expresses exactly what you want to say; and the same remarks will apply to floor instead of bottom-board.

S. T. PETTIT.

Belmont, Ont., Can., April 10.

[Yes, we are with you on the use of all kinds of short cuts; but when it comes to the matter of changing old terms to something better and more accurate, that is another question. We have tried to change names to our sorrow. But we have been partially successful with one; viz., "bee paralysis" instead of "nameless bee disease;" but even now we notice in some of our exchanges that the old name is still floating, and that many of our correspondents, in writing to us, still hang to the old nameless name. Of course, we substitute the new name.—Ed.]

A PROPOSED NON-SWARMER.

The past two seasons I used a device that has seemed to work well; but as the past season was a very poor one it is hard to judge of its merits; but I should like your opinion of the plan, which is this:

I bore an inch hole in the front of the hives, just above the entrance (which hole is corked up until the first swarm issues). I then catch and cage the queen (my queens are all clipped), and place the new hive on top of the old one, placing a false front on the old hive, with a strip along the back that closes the entrance to the old hive, and a wire cone bee-escape that goes through into the old hive at the inch hole mentioned. I have a slit 3 inches long and $\frac{3}{8}$ wide up through the bottom-board of the new hive. As soon as the swarms commence to return they alight at the old entrance and follow up between the front of the hive and the false front, up into the new hive. I turn the queen in with them, and they are speedily at work in their new home, with all the field-bees joined with them; and all the bees that come out of the old hive, so long as the device remains on, are added to the new swarm, while the old hive is so reduced in strength by the time the first

queen hatches that there is no danger of swarming again. The device must, of course, be removed in time to allow the young queen to return after a wedding-flight.

The only trouble I experienced was from the escapes getting clogged up with drones; and I should like to know the best size and shape to make them, to prevent that. I should also like to know what objections are likely to arise to this manner of preventing after-swarms.

C. F. BATHAM.

Houstonia, Mo., March 19, 1894.

[As we have never experimented with non-swarming methods we referred this matter to Dr. Miller, who replies:—Ed.]

Perhaps all that is necessary to prevent clogging in the cones is to have them larger. One with an outlet half an inch or more in diameter would probably not be clogged. An objection to the plan, aside from the extra trouble, is that the old hive has no bees entering it for a week or so, and all bees old enough to fly out leaving it. That will result, at least at times, in the partial destruction of the young brood. Would you not accomplish the same result, with less trouble, by the old method of moving the old hive to a new location at the time of hiving the swarm on the old stand? The only advantage that your plan has is the greater depletion—a depletion that may be carried to excess. If the simple plan mentioned does not deplete as much as you like, then you can do this way: Hive the swarm on the old stand, setting the old hive beside it, but with the entrance in another direction. A week after swarming, put the old hive in a new location. In this case the brood stands but little chance of being neglected, while all the bees will be added to the swarm that your plan would give them.

Marengo, Ill.

C. C. MILLER.

AN OFF YEAR FOR CALIFORNIA.

This is going to be one of our off years in this southern county, for honey. I do not look for an extracting. The off years are becoming monotonous—'91 and '92 no honey, and now '94 none. It will give the glucose fiends a chance to get in their work as they did in '91 and '92. There was not a hundred tons of honey gathered, yet they shipped that many carloads, purporting to be pure honey.

Newhall, Cal., Mar. 30. G. W. LECHLER.

HOW TO SMOKE BEES OUT OF SUPERS.

I got hold of an idea last summer, in the way of taking off crates of sections, that beats all of the escapes I have ever tried yet. I call it my smoke-house. I took a Simplicity body and nailed a bottom to it, and pieces around the top edge within half an inch of the top for the super to rest on—that is, my size of the super for the ten-frame hive. Then I bore a 1½-inch hole in the center of one end, and set the crate on, and blow smoke in at the hole with a smo-

ker; and you would be surprised to see how soon the bees will be out of the crate. The smoke comes up so evenly all over that they can't stand it. Robbers have no chance to bother; and by using a brush you can keep the young bees all at home.

S. S. KISSEL.

Horatio, Ohio, March 22.

SUNFLOWER TO SHADE HIVES.

Last spring my six-year-old Winnie planted some sunflower seeds not far from the beehives. During the summer, while the bees were working on the blossoms, the idea occurred to me that the plant would make an excellent shade for the hives. By setting two plants at each hive, south and west, I think there would be sufficient shade from the middle of June till along in September, or as long as shade is necessary. As we live on a new place, and have no trees large enough for shade, I will plant sunflowers at each hive this spring. The plants may be transplanted, and will grow equally well, and will produce a greater number of flowers, though not as large as those from plants not transplanted.

Glidden, Iowa.

MRS. M. E. MOFFATT.

[On our old honey-farm we grew sunflowers to test them for their honey, but we do not remember to have noticed that the bees worked on them. It is said that bees will visit them at times; but you refer to them only as shade. Those we have grown would be too tall and spindling to afford very much shade.—Ed.]

OUR SPECIAL ARTIST'S METHOD OF CLEANING WALL PAPER.

As we at our house are in the midst of house-cleaning, it has occurred to me that the knowledge of how to clean wall paper properly would be a thing greatly to be desired by many of the readers of this journal. Preparations of various kinds are sold in many of the stores; none are any better than the one I use, and several are expensive and uncertain, while the cleaner I shall describe is neither expensive nor lacking in its qualities. We have used this cleaner for years, and know "whereof we speak." Prepare the cleaner, just as given below, and any one can make a success of it.

Take a quart of finely sifted common white flour, and pour boiling water upon it, to scald it thoroughly, and make a moderately thick dough. After removing it from the stove, add one liberal cup of common household ammonia and mix very thoroughly, so as to permeate the mass. When cool enough to handle, cut the dough into convenient lumps, and, while it is now sticky, knead dry flour into it until the stickiness is removed and it can be handled with ease. Don't add any more dry flour than will accomplish the desired result, or else the mass will become crumbly. It is now ready for application to the walls, which must always be done in good long strokes, always being careful to wipe or work from the cleaned paper into the dirt, and never

the other way. Moreover, after each wipe, the dirt adhering to the lump must be kneaded into the mass so as to present a new surface to the work. The lump can be used until it becomes quite dark with dirt. Last night I cleaned a room 12 x 14, ceiling and all, with but four good handfuls, and in about an hour and a half. This same paper had been cleaned three times before, and to all appearances it can be cleaned several times more. The possession of the above has been a source of comfort and saving to us, and we hope it will be tried by others.

Cleveland, O.

R. V. MURRAY.

IN FAVOR OF THE TEN-FRAME HIVE.

Brother Root:—To-day I made a visit to my Bronson apiary, numbering 105 colonies, and found them in splendid condition. I always winter this apiary outdoors in Root's old-style two-story chaff hives, with uniform success; and if you will promise not to let Bro. Miller and those other "fellers" pitch into me I will tell you why.

A few years ago I thought these hives too large to secure the best results in producing comb honey, and I reduced the size of the most of them from 10 to 7 frames by the use of dummies. Each year thereafter I noticed that the hives in which the dummies were not used wintered the best, were the strongest in the spring, and gave the best results. Why? Because the colonies in such hives had an abundance of honey, and never required feeding. My experience for 20 years teaches me that the less bees are tampered with from Nov. 1st to May 1st, the better will be their condition; and I seldom visit my out-apiary between those two dates.

Last winter I lost only two colonies out of 107, and they were queenless, and probably had been so for some time before they went into winter quarters. Such experience conclusively proves to my mind that the 10-frame hive will, on the average, produce the best results.

If you wish I will tell my method of operating in producing comb honey, and how I produced 4 tons from 120 colonies last year.

Norwalk, O., May 4.

S. F. NEWMAN.

NOT MARKING QUEEN-CAGES.

I think it would be well for you to warn your advertisers not to send out queen-bees without marking their names on the cages. Last fall I received two warranted queens in the same mail from different parties, and no mark to distinguish them. Had either proved mismated it is probable that injustice would have been done and hard feelings caused. Again, this spring, among other orders, I ordered, a week apart, a warranted queen for a neighbor and a select tested queen for myself. A queen arrived without any mark on the cage; so, judging from the time since ordering, I passed the queen to my neighbor as the war-

ranted one; and now, a week later, comes a queen with the sender's name, which proves to be the warranted one, which I have had to take or run the risk of changing queens again. Had this warranted queen proved mismated, and the cage not been marked, I should have been apt to think that the party I bought the select tested queen from had cheated me; and if I had claimed another queen from them they would think likewise of me. R. F. RITCHIE.

Rumford, Va., April 28.

THAT VANILLA-FLAVOR TASTE IN SWEET-CLOVER HONEY.

I saw a query in *Stray Straws* of March 15th as to where or how bees get vanilla flavoring in honey. I think they get it from sweet clover. If you will put a couple of seeds in your mouth, and chew them, you will find they have a strong vanilla flavor. Here in this section of Colorado, where we raise so much alfalfa, sweet clover is voted a nuisance; yet it grows wild along the ditches, and the bees work on it.

Timnath, Col., April 10. ABRAHAM ELLIOTT.

[No doubt you are right as to the source of this vanilla flavor.—ED.]

MAPLE SUGAR, ETC.; SOMETHING FROM BERT COOK, SON OF PROF. COOK.

I am glad to see father again writing for *GLEANINGS*. From all I hear, I think that he enjoys his California home very much.

I see your remarks about the maple-sugar product in Ohio, and you can include Michigan right in. We almost always make 250 gallons of A 1, but this year only 115 gallons, and about 100 of it is *rank*. Too bad. Uncle's bees are in fine shape, and we have 15 acres of alsike clover that will bloom for them this year, so we expect quite a flow from that.

Owasso, Mich., April 21.

BERT COOK.

[We are very glad also, friend Bert, to see your father's communications in our columns; but we are sorry to hear the unfavorable report in regard to maple sugar and syrup in Michigan as well as Ohio. But it only seems to emphasize the fact that all industries—especially rural industries—are uncertain.—ED.]

GOOD FOR SEALED COVERS.

My bees had a good flight March 4 and 5. Out of 55 colonies, 51 were alive, and all seemed strong; 45 had sealed covers. Among the dead ones, two colonies had sealed covers and two had on Hill's device. E. U. PARSHALL.

Cooperstown, N. Y.

[Is there any question upon which there are any more diametrically opposite experiences than upon this sealed-cover idea for wintering? At one time last year there would be a batch of reports praising the sealed top, and at another time, for the same winter, there would be as many or more declaring the sealed cover a fraud and a mistake. We shall advocate, however, absorbing cushions, because they have done well by us. But the sealed covers gave us a black eye that we haven't forgot, and won't for a while.—ED.]



For thou art my rock and my fortress: therefore for thy name's sake lead me and guide me.—PSALM 31:3.

THE last *British Bee Journal*, April 26, alludes to "the remarkably uncertain character of the weather during the last few days," and we infer that it has had a depressing effect upon "the hopes and prospects of bee-keepers."

WE have received a large sample of what is said to be genuine orange-blossom honey. Its flavor is not quite equal to samples we have tasted before. It is good honey, however, but not equal to some of the Southern honey we have tasted.

CRAMPS in queen-bees when picked up—what causes them? is a question that is discussed by friend Doolittle in another column. We now have quite a number of queen-breeders. We should be glad to have them throw on a little extra light from their experience.

PROSPECTS for a fine honey crop this season were never more flattering. If we are not *sure* of a good flow from clover and basswood, we are *sure*, from the heavy brood-rearing now going on, of a large force of bees that will be ready for business *if* the honey does come.

WE have said much about the practicability of the bicycle in these columns; but it is evident that very few bee-keepers yet fully appreciate its real value for out-apiary work. We have been trying to get Dr. Miller on one, but so far he doesn't seem to enthuse very much. Perhaps many would get a wheel if they really thought they could ride. Most men will learn to ride, with a practical wheelman to show them how, in about half an hour.

IN speaking of our course regarding the publication of the analyses, Mr. Hutchinson says: "I have every reason to believe that this course [the one we took.—ED.] is taken from the best of motives." This is as generous as it is kind. We have every reason to believe that the attitude Mr. Hutchinson has taken on the same question is also taken from the best of motives. We do not object; but, on the contrary, we court candid criticism when such a spirit is back of it.

DANDELIONS seem in our locality to be unusually profuse and persistent, especially on the Rootville lawns. Although we cut 'em down nearly every day with a lawn-mower or scythe, yet their heads will bob up here and there as if we had made no effort to cut 'em off

from the face of the earth—around our houses. But the bees—what a gala time they have been having over them! Whether they get much honey, they are carrying load after load of green pollen, and the combs are speckled full with the stuff.

THE following, from the General Manager of the Bee-keepers' Union, will explain itself:

Bro. Root:—Some are criticising me for not prosecuting Mr. Heddon, and want to know why the Union did not do so. I desire to state the facts in a few words, and also to correct the error about Mr. Soper having sent me the samples said to be Heddon's adulterated honey. I shall not state how they came, nor from whom—but that I have not had a line nor any samples, either pure or adulterated, from him for several years past.

I would willingly prosecute adulterators; but the Board decided that we must have evidence strong enough to reasonably expect conviction. This we did not have. THOS. G. NEWMAN, Gen. Manager.

There is no need for haste in this matter. The Board probably has been waiting to see all the facts pro and con.

A RATHER spirited controversy, we should judge, has been going on in the *British Bee Journal* between the editors on the one hand and a correspondent on the other. In order to close up the discussion, the editors insert a long article from him, criticising them rather sharply, but refrain themselves "from adding a word of comment on it," because of their "desire to avoid even the risk of further reply;" and they add that "all that has been done or said in the matter by the editors of this journal is recorded in print, and they (the editors) are perfectly content to be judged thereby." This is not only wise, but an exceedingly fair way of dropping the discussion; and on similar ground we at present feel disposed not only to let Mr. Heddon speak for himself, but have the last say within reasonable bounds.

THERE seems to be no special need this spring of going to the expense and trouble of gathering statistics as to how the bees have wintered; for reports, with hardly an exception, show that they have come out unusually well. Not only is there no loss worth speaking of, but the colonies are unusually strong. Never before do we remember of a more favorable spring for bees. In our own locality hives are filled with honey from fruit-blossoms and dandelions, and in our own apiary we have had to give more room, and divide. Our neighbors have had swarming, and yet fruit-bloom seems to be only fairly out. By the flood of orders, we should judge that a similar state of things prevails throughout the North. It should be said that, in certain parts of the South, frosts have done some damage.

THE editor of the *Progressive Bee-keeper* says we had 20 columns of matter to boom our own wares in the April 15th number; but he failed to observe that we also gave in that same number 55 columns of reading-matter on the

subject of bees, 13 columns of other reading-matter, and 17 columns of advertisements from other parties—in all a 52-page journal. We agree to give our readers only 36 pages semi-monthly; but as we had more than our usual advertising matter we put in extra pages. The *Progressive Bee-keeper* is a 28 page monthly, and yet its editor took nearly 7 columns for his own advertising in his last number, or nearly one-eighth of his regular issue. We added 32 columns *extra* to our regular issue, and took 18 of these (as we count it) for *our own* advertising.

IS BEE PARALYSIS INCURABLE?

We are beginning to fear that bee-paralysis in warm countries is an incurable disease, for all known methods so far have failed. Besides the case of Mr. McFatridge, mentioned by Rambler on pages 369 and 371, Mr. T. S. Ford, of Columbia, Miss., has been having quite a time with it. It threatens to destroy his apiary, and yet he has tried faithfully every remedy we could propose. It is, therefore, for the South, and certain parts of California, more to be dreaded than the much-dreaded foul brood, because the latter is curable. Inasmuch as bee-paralysis may be disseminated through the queen, queen-breeders should post themselves as to the symptoms of the disease; and the first suspected case of it should be stamped out immediately. But purchasers of queens should not jump to the conclusion too hastily that bee-paralysis comes from any particular queen received. Witness the case of Mr. McFatridge, above referred to.

But it should be remarked that bee-paralysis seems to yield to mild measures in the North, and hence has no terrors for the Northern bee-keeper.

We are pleased to know that Prof. Cook promises to experiment, and we hope he will find an antiseptic that will cure.

FOUL BROOD: ITS NATURAL HISTORY AND RATIONAL TREATMENT.

THE above is the title of a new work by Dr. Wm. R. Howard, of Fort Worth, Texas, and published by G. W. York & Co., Chicago. It contains 47 pages, about half the size of this. We have not had time to read the work through; but, so far as we are able to judge, it is the most practical and reliable book on the subject of foul brood alone that we know of. It treats it practically and scientifically. It reviews and criticises the works of Cheshire, McLain, Mackenzie, Wm. McEvoy, and Prof. Cook. The whole is put in popular form, so that any one can understand the scientific aspect of the disease. It is made up of a series of propositions, each one of which the author demonstrates very carefully in a page or two of matter. After reading them through we can thoroughly indorse them. For instance,

Prop. 2 is particularly sound. It reads as follows:

The decomposition of chilled or dead brood does not produce foul brood; and putrefactive non-pathogenic germs do not produce those of a pathogenic character.

The latter portion of the work is devoted to the treatment and cure of the disease. He says on page 25:

I regard the use of any and all drugs in the treatment of foul brood as a useless waste of time and material, wholly ineffectual, inviting ruin and total loss of bees. Any method which has not for its object the entire removal of all infectious material beyond the reach of both bees and brood will prove detrimental and destructive, and surely encourage the recurrence of the disease. The reader is referred to the criticisms in the following reviews for further discussion of the methods of treatment.

After discussing the treatments recommended by Cheshire, McLain, Mackenzie, and McEvoy, he indorses the latter's plan by the following:

From my experience with *bacillus alvei*, its nature and growth, it would seem clear that Mr. McEvoy's method, though simple and plain, would prove efficient, for it has been noted that any method which removes the foul-brood *bacillus* from the reach of bees and brood will cure the disease. His plan has for its aims, first, to remove all foul combs with their contents from the bees, and destroy them by fire; secondly, to cleanse from the bees all the honey taken with them, which contains the infectious germs, before any brood-rearing is commenced. The labor of these first four days taken away generally removes most of the infected honey, when full sheets of foundation are given, and worked out; the infected honey is consumed in comb-building; brood-rearing is commenced in new clean combs, and a healthy colony results. The work of handling the infected colonies is done *in the evening*, in order that no robbing may result, to carry the infection to other colonies.

Our readers will remember that this is essentially what we have recommended, and what we used with such success in curing some 75 diseased colonies in our own apiary several years ago, with the exception that we boiled the hives. We at one time thought it was not necessary to disinfect them. Later experience showed that colonies treated and put back into their old hives without boiling showed sooner or later the same old disease; but when the hives were immersed in nearly boiling water the disease never reappeared.

It would seem that the author, before he began his investigations, was prejudiced against the McEvoy method; but the mere fact that his studies and researches changed his previously mapped-out conclusions would indicate the fairness with which he went about the work. In the concluding paragraph of the book he says:

Thus it will be seen that McEvoy's method of treatment, which at first was so unpopular, and seemed so far from being correct, has, much to my surprise (and, need I say, disappointment?) been shown to be the only rational method laid down among all the writers on this subject.

Many of our scientific investigators have, in the past, endeavored to make their experiments prove their previously conceived ideas; but here is a case where it worked just the other way. The price of the book is 25 cts. by mail. It can be obtained of us or the publisher.

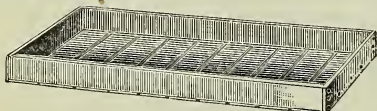


ON THE WHEEL—HIGH-PRESSURE GARDENING.

Oh dear me! what a story I did tell in our last issue about the women-folks down at Jordan & Johnson's setting out 40,000 plants from the seed-bed in a day! It was only 4000 instead of 40,000. The price they get is $2\frac{1}{2}$ cts. per 100, or 25 cts. for 1000 plants. Now, if the dear friends who read GLEANINGS will only "take me as I mean, and not as I say," I shall be greatly relieved. Yesterday, May 2, I took another run down there on my wheel to see how the great plant-ranch was prospering.

About a week ago we had quite a frost here in Medina; but I found that they had still more of a frost in the low lands at the swamp. It had done quite a little damage, both to onion and celery plants, where they were not sufficiently hardened off, or of size enough to have sufficient root to withstand the freeze. Here is a lesson in hardening off. Soft green plants right out of the greenhouse can not stand much sun, frost, or wind. I cautioned the friends who were going to raise the large amount of Prizetakers about being in a hurry to get at it. On inspecting the grounds several things were pretty evident. The plants put out before the frost, where they had sufficient time to take root, were probably not hurt—that is, where they were carefully set. Some that were put in by small boys will probably, many of them, die. Those put in after the frost, and that had got a little more root in the hot-beds, are looking nicely.

During my former visit I did not find the women-folks at work setting out plants; but this time the whole establishment was running at full blast. Now, to explain to you what I learned we shall commence with the transplanting. Let us first consider the boxes for holding the plants.



TRANSPLANTING-BOX FOR SEEDLINGS.

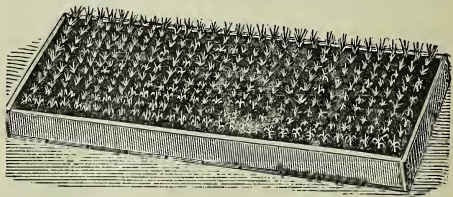
Let the above represent one of the boxes where the women set the plants. I should think they have about 3 inches of swamp muck in the box—perhaps not more than $2\frac{1}{2}$. The muck is sifted so as to get all the lumps and trash out, and then they press it down into the box and smooth off with a stick to the level of the top of the box. A man does this, and the boxes full of soil are piled up ready for the women. They work standing up at a bench—at least, I did not see any of them sitting down. Each box contains just so many plants. Spacing is done with a tool similar to the one I illustrated in our book, "What to Do." Below is a cut of it.



SPACING-TOOL FOR TRANSPLANTING, SOWING SEEDS, ETC.

Now, instead of going to the expense of making these tools of metal like the above, they simply make them of strips of wood. One is used for

the end of the box; another is to be used along the side of the box. These spacing-strips are made of pieces of wood, say a little wider and a little thicker than common lath. Take such a strip and cut saw-teeth in it; but before cutting the teeth have it planed down to a sort of knife-edge on one side. The result is, that these blunt saw-teeth will be tapering, somewhat after the fashion of a pyramid, but considerably thinner one way than the other. All that is needed is to have them come up clean when they are pressed down into the muck in the box. The long strip is used first, set down at the sides of the box first on one side and then on the other; then the short strip is pushed down, letting each end tooth strike in the prints of the longer one. This, you see, spaces the boxes accurately. At first I was very forward in telling them of my machine, pictured on page 106 of GLEANINGS for this year, because we space a whole boxful at one clip; but I soon found out that I was not quite so much ahead of our friends in the swamp, after all. I will try to make it plain without illustrations more than what we have above. Suppose the boxes I have described were placed on a bench in front of the workman, one end of the box being close to him and the opposite end raised about 6 inches higher than the end next to him. The workman, or woman, rather, takes a spacing-tool in her hands and presses it into the soil, say at the end of the box near her. Then she proceeds to put in the seedling celery-plants—one in each cavity made by the tool. As she drops in the little plant, with the end of the finger she presses the moist soil against the root. When the row is finished there is a series of cavities left where she presses her finger, almost sufficient for setting in the next row. But to make it regular and true she takes the spacing-stick again and presses it down, letting each tooth of the tool go into one of the cavities left by the fingers, or pretty near there; for the prints of the long teeth along each tell exactly where the spacing-tool should be pushed down. You see, this makes the whole operation very simple, and it is not any wonder at all to see each box of plants look exactly like the one below, when finished.



A BOX OF WHITE PLUME CELERY-PLANTS AS IT APPEARS WHEN FIRST TRANSPLANTED.

As fast as one of the women fills a box like the one shown above, she sets it on a broad plank that extends out of the window, and down an incline to the cloth-covered cold-frames—the cold-frame I described in our last issue; but I think a little further explanation may come in right here. The beds are about 40 feet long, which is a little shorter than our own, which are 50 feet. Now, our beds are filled with soil; but these I am describing are not. In fact, the soil is all shoveled out down to, say, about a foot below the natural surface of the ground, and a great part of it is piled in the paths between the beds. This serves the double purpose of keeping out frost when it is cold, and keeping the inside damp during very hot weather. Then, about 10 inches from the bottom of the bed, some stringers of scantling

are arranged—three lines of stringers, in fact—to hold the boxes of plants. The middle one holds the ends of both rows of boxes; the other two, one near the north and the other near the south side of the bed, hold the other ends of the boxes. This gives a space under the boxes of plants of nearly a foot; and in this space two lines of steam-pipes may be run during severe weather. Above the plants when first transplanted is the cotton sheeting I have described.

Now, with all the experience I have had in plant-raising I learned quite a new trick in just a few minutes. Perhaps I might explain first that the women-folks had all heard of A. I. R., even if they did not know him personally, and in a little time we were chatting and discussing our work as if we were all blood relations. I suggested that our boys always use a stick or wire nail for pressing the plants into the ground, and I gave as a reason that it made their fingers sore. One of the men slyly insinuated that our Medina boys must be "soft-fingered." I defended them by saying that it was the difference between their beautiful soft swamp muck and our Medina clay soil, even when the latter is softened by an abundance of stable manure. But I told them, too, that, although our boys might be *soft-fingered*—some of the small ones—I was quite certain that none of them were *light-fingered* or very likely to be.

I had to do so much talking with one of the bosses that he naturally forgot about his part of the work until somebody called out, "More plants!" He took a tin pan and made haste to gather some plants from one of the beautiful plant-beds. Instead of taking them clean as they went, he just thinned them out by taking a pinch here and there. In our soil I fear he would have pulled off the roots; but not so with this soft swamp muck kept slightly moist by the sub-irrigation I have told you about. After he had pulled out a painful one would hardly notice that anything had been taken from the bed; and he said they had been doing that for weeks. As fast as they made room, little celery-plants were coming up underneath, taking the places of those that were removed. But some of the plants he took this time were what we call long-legged. The bed was pretty well crowded, and I think some of them must have had leaf stalks 3 inches long. Of course, they could not hold themselves up; and as they put them in the boxes they let the tops fall down, all in one direction, toward the front of the box. I asked the proprietor if he supposed those long spindling ones would ever come up in the world. You see, *we* have had some failures right along in this line.

"Why, to be sure they will, Mr. Root, if we manage them right. Come and see."

Then we went outside to those cloth-covered cold-frames. There the boxes of plants stood in long rows. The plants just put in lay flat down on the ground, as I expected they would. Some they had planted in the morning had raised up a little. Those planted 24 hours before were almost straight up; and where they had been out 36 hours or more, every little stem stood as erect and handsome as it did in the seed-bed, and yet each plant had room enough to stand up and put out its roots and grow.

Now, I have made a big mistake in being in too much of a hurry to give my plants a little sunshine. These beds, as they have them made, preserve a moist atmosphere, and heat enough from the sun gets through the cloth to warm them all they will bear. No wind or current of air is allowed to strike them for about two days. While the weather is mild and the air still, the sheeting is rolled up nights so as to give the benefit of the night air and the

dew. Mr. Johnson agreed with me that a gentle shower, or the dews of night, are better for plants than any thing man has yet invented.

Now, perhaps you may think I am making a good deal of fuss about a simple matter; but here I saw this whole matter of transplanting from the seed-bed into boxes carried on with mathematical precision and accuracy. Just 25 cts. per 1000 for transplanting, and every plant, so far as I could see, grew. There were not any vacancies nor any missing places to be filled up afterward. Even during the month of May they were still constructing more cold-frames to hold more boxes of plants—not so much to protect the plants from the cold as to protect them from the sun and wind. Mr. Jordan says the wind often does more mischief, if it is not carefully kept out, than either sun or frost. I did find a few boxes with an uneven stand in them. Said friend J., "Shall I tell you what made that break in these few boxes right here at this corner?"

I signified my anxiety to know. Then he stuck the toe of his boot toward a crack between the boards. This crack was hardly large enough to notice; but it let enough wind through to kill the plants. Said he, "I wanted these beds all made of matched lumber; but they thought any thing was good enough for this purpose, and now you see the result." It made me think of the time when I lost plants enough to pay for glass to cover them nicely, during just one frosty spell of weather. Of course, there are extremes both ways in this matter of going to the expense of doing things well. Sometimes rough pine boards will answer just as well as planed and matched lumber; but I am more and more convinced that hot-beds and cold-frames should be made tight and strong. The same operations that produced these beautiful celery-plants will work with almost any kind of plants; and boxes of beautiful cabbages, tomatoes, lettuce, etc., attested the fact.

I suggested that it would be quite a saving in fixtures if the beds could be filled right up with soil, and the transplanting done right in the beds; but Mr. Jordan took me to a part of the premises where he had men putting out plants in that very way. Of course, they could not very well ask the women to get down on their knees outdoors over the beds. Well, he said he had carefully figured out the expense; and while the work done by the women was much more successful, the expense was very much less, even when we counted the cost of the boxes, having a man to fill them with dirt and another to carry them out to the beds, etc.

The women had a very comfortable place to work in, and, judging from their looks, they enjoyed their work. I suggested to one of them that I thought setting out plants was just as nice as teaching school. Good transplanted celery-plants are worth \$3.00 per 1000, or \$25.00 for 10,000. And one great trouble is, that, when you *pay* for transplanted plants, you do not always get them. Here were beautiful, strong, well-rooted and well-hardened plants; and you can figure out the cost yourself from the facts I have given you. As the firm of Jordan & Johnson are, however, planning to plant something like 75 acres, they had not, at the time of my visit, any plants to spare.

I left Medina at 2 p.m. The distance of 12 miles I made in a little over an hour, and I spent another hour gathering up the facts I have given you above; but I was not ready to go home yet. I had had many invitations from the "land of Canaan," from my good friend Notstein, who had urged me to visit the "land flowing with milk and honey." As it was only about three miles further I soon made it on the

wheel. Friend N. was away from home; but I had a very pleasant visit with the wife and family. One of the little girls was just coming home from the postoffice with GLEANINGS in her hand; so you see they knew a good deal about *me*, even if I did not know very much about *them*. I enjoyed my visit very much at Willowdale Nursery. We discussed the new "iron-clad" plums that the curculio can not bite because its teeth are not strong enough; and then I went up among the bee-hives, and saw the sections being filled with honey from fruit-blossoms. They said it was the first time they had ever known bees to work in sections in April, and I do not know but it is the first time I have ever seen them do it here in our locality.

Just before crossing the border, as nearly as I can make it out, that separates the land of Canaan from the rest of the world, I passed a piece of woodland partly cleared up. Well, the whole surface of the ground under the trees was covered with wild flowers to such an extent that it looked as if it were covered with snow, except that the snow was pink instead of white. But no snow ever exhaled such a wondrous perfume as came from that woodland lot just over the fence. No wonder I thought of a land flowing with milk and honey. Before I left I was treated to a glass of luscious milk, and, I might add, some of the honey gathered from fruit-bloom in April, had I stopped long enough to remove it from the hives.

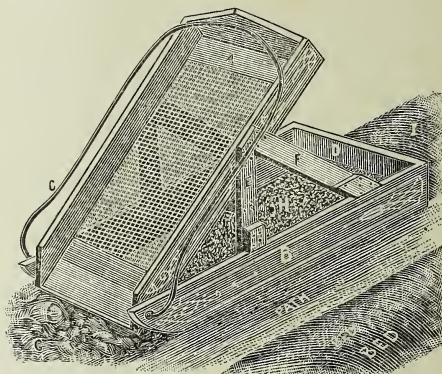
I was 15 miles from home, and it was well toward night; but with the little light Victor Flyer I made the first 6 miles in 30 minutes—or, to be exact, just 29 minutes. The rest of the road, however, was so much of it climbing hills that I did not keep up so much speed. Just think of it—32 miles after two o'clock in the afternoon, on a little wheel that I carry about easily with one hand, and not a bit tired at that! My impression is, that the new wood rim is a little more springy, and bounces over obstructions with less injury, than a wheel made all of metal.



GARDENING IN THE MONTH OF MAY.

I do not know, friends, but my talk will be all gardening this month, and nothing else; but if you could take a look out of the window where I sit dictating just now, and catch a view of the plant-beds of that quarter-acre (that is to support a *family* you know), you would not be much surprised; for I tell you that the plant-bed garden promises to bud and blossom, and bring forth, more than even anticipated. One thing begins to be evident: It takes quite a little *time* to get the soil in any plant-bed up to its best. The way we proceed now is first to spade up the soil in the bed down quite deep, say a foot or more. Our good friend Ben, with his German thoroughness (as well as strength), is getting to be quite an expert in the way of "making up the beds." When he first came here he could not talk English; and while working for me he has not only learned to talk, but to read and write. I notice he writes the names of the plants on the labels very neatly. Well, he does not talk very much—probably because his tongue does not rattle off English quite as glibly as do those of the small boys all around him who are setting out plants. Another thing, Ben's mind is so wholly

occupied by his work that he has not time to talk very much. Well, even if he does not say so, I know he enjoys working in the plant-beds better than almost any other work. This he shows by his actions. Well, he has learned just how to spade up the bed and work in the stable manure. We put in from one-fourth to one-third manure in each bed. Instead of "spading" I should say "forking," for it is all done with a potato-fork; and while forking it up, every forkful gets a clip from the four-tined instrument, to pulverize the soil as much as possible. After forking, it is further chopped up with a wide steel-toothed rake. Then the whole of it is sifted with the machine shown below.



PULVERIZING AND MIXING THE SOIL IN PLANT-BEDS.

I have given a picture of this before, but it proves to be of so much importance that it will do no harm to give it again. You can make one yourself, or you can buy one of the dealers who keep them for sifting sand, gravel, etc. We use two screens of this kind—one coarse and the other fine. For a new bed we used the coarse one. Perhaps six inches of the chopped-up earth and manure is shoveled on the screen. A small boy, with the back of a short-handled rake, rubs and pounds the dirt on the screen, to make it go through; then Ben shovels the coarse trash—manure and lumps of dirt—away from the bottom of the screen, and spreads it out where the dirt has just been shoveled off. The screen is then moved along. The result is, that all the coarse stuff is at the bottom of the bed, and you have nothing but soft fine soil mixed with the manure, on the surface of the bed. We rarely get an extra crop the first time a bed is made up. If we had good rich garden soil and very fine old manure, such as they sometimes find where they move an old barn or stable away (just think of it, friends, the amount of fertility that lies idle year after year under almost every old barn and stable in our land), there would be no difficulty. Well, even if we do not get a full crop the first planting, we are getting the ground into "heart" as the old-countrymen say. The next time one spades it up—that is, after the first crop is off—he brings the old manure and trash to the top. It is now a good deal rotted, and will work up nicely. But we manage to put in some kind of manure at almost every time of working it. Of late I have been paying 25 cents a barrel for poultry manure, and for a time I thought it did not pay very well; but I can tell you now how to *make* it pay. A few days ago we got some that was quite old and dry. I told Ben it would have to be rubbed through the screen along with the soil in the beds; and as the bed had been, almost ever since it was made, rather

poor, and was just being made up, I told him to work poultry manure into that. The bed was close to the greenhouse, and I suspect it got a pretty good share of yellow clay that came out in making the deep walks inside of the greenhouse, between the beds. Well, they put in perhaps two barrels of hen manure in 50 feet of bed—beds 6 feet wide, of course. As soon as the bed was made up, and they took rather extra pains in sifting this and mixing it well, the boys set it out to Wakefield cabbage-plants. I told you in our last issue that we were sold out of the Wakefield. The plants had become rather spindling in the greenhouse, and I was afraid they would not grow; but the boys pushed them clear down to the first leaves, in the soft soil, and we kept the bed pretty well watered, and I was somewhat astonished to find every plant taking hold; and, almost before the last GLEANINGS had got into the hands of its readers, we had a *magnificent* bed of Wakefield cabbage-plants. Several summer showers helped them along, and now they are about the handsomest bed of cabbages I ever saw in my life. Other folks think so as well as myself, for almost everybody who goes by wants 10 cents' worth; and they are almost always pleased to find that they get 25 for a dime. Somebody said that the cabbage-plants they have up street at the groceries are 10 cents a dozen, and they are little spindling things that had not been transplanted at that. Well, these that grow over in the bed where the poultry manure had been put in were the deepest and richest green of any plants I ever saw. They were put out just two inches apart from center to center, with that closest spacing-board pictured on page 106. This spacing gives a little more than 250 plants to every running foot of bed; and a bed 50 feet long, at this rate, contains 1250 plants, worth, at the lowest wholesale price, \$2 50 per 1000—or, say, \$25.00 for a crop that occupies a bed 6 feet wide and 50 feet long for *only 30 days*. What do you think of that? Do you say, "Oh! that is theory; nobody can do that actually"? Hold on. Last Monday I received *\$25.00 cash* for the celery-plants that our boys took from beds just 40 feet long and 6 feet wide. These celery-plants were started under glass, and occupied the ground for perhaps 60 days. We were at the expense of glass to cover the beds, and exhaust steam to heat them a part of the time. But, as I have told you before, our beds do not all earn as much. It is because they do not get as much brains. To take care of that quarter-acre plant-garden, and make it do its *best*, would occupy about all the time I care to work; and it would take, too, about all the brains I could scrape up—that is, to have it do its best. You may say, "Why don't you hire a competent foreman?" I do not *know* of any such individual. I doubt whether there is now one on the face of the earth who could make every bed boom *every 24 hours* as I know each bed *might* be made to boom. But I expect to see quite a lot nearly up to that standard, within the next five years. They must be "made to order," exactly as we grow the plants; namely, "grow" the boys and girls; and while they are growing in skill to handle God's treasures that come out of the soil, they need to be taught to grow in grace and in love—not only with the plants, but with the great God above.

I am getting so that I have no patience to fuss with any kind of vegetation or fruits unless I can have a soil like our plant-bed soil to work with. The bed nearest, right before where I write, contains those Timbrell strawberries. A small boy has been kept pretty busy picking off the blossom-buds, and now runners are putting out already in great profusion. It needs an-

other boy a little older, and with more intelligence, to take each runner and place it so as to economize the room. Where the runners are putting out it would almost keep a boy busy. I asked Fred, a few days ago, if we didn't get ever so many more strawberry-plants out of our plant-beds than we did even from the rich creek-bottom soil down in the flats. He replied, "Oh, yes! to be sure we do—a tremendous sight more plants, and ever so much larger and stronger." Just yesterday we had 100 Parker Earle plants to go by mail; and, even after pulling off the blossom-buds, and trimming the plants about all we dared to trim them, the package weighed more than 4 lbs. I do not want to have you think that *all* the plants we have sent off this spring were like these. They have not been; but when I get my ideal plant-garden to working better, we are going to try to have them that way. And now it begins to impress itself on my mind that not only strawberries but gooseberries, currants, and raspberries, would give crops that nobody ever yet heard of or perhaps dreamed of, if they were managed on the plan we are talking about—that is, grown in rich plant-beds. In the first place, the ground around the bushes must be soft, clean, loose, and rich—yes, and well watered too; for with the big windmill we never expect any thing to get dry in our plant-garden; and nobody yet knows how much water rank-growing crops can use in hot weather. The *Rural New-Yorker* urged its readers to get rich by selling water—that is, the water that is contained in fruits, berries, vegetables, etc. Your customers will not complain—never fear. What they complain about is, that we carry them fruits and vegetables that are an imposition simply from a *lack* of water at a critical time. Another thing, the plant-beds, properly managed, absolutely prevent stamping the ground down hard all around them. Sometimes when a new boy goes to work for us he walks across the bed instead of going around it, and thinks nobody will find it out. But he might as well have tried to walk over a bed of snow, almost without leaving tracks. When I get around, the boy who walked across the beds gets called up; and I almost always find out who did it. Of course, we need plenty of "bars," as we term them—strips of light wood 6 inches wide and 1½ thick, just long enough to reach from one side of the bed to the other. In transplanting the crops, and in making up the beds, these boards are in constant requisition.

Do you say these beds are used only a part of the year? Why, bless you, they can be utilized every day in the year. During the winter time they should be full of cold-frame plants—that is, where you do not have any steam underneath; and in the summer time, after the call for cabbage and celery is over, every yard of space can be utilized in growing strawberry-plants. The strawberry-plant trade opens just as the vegetable-plant trade slackens up; and when there is not any demand for plants, every foot of bed can be utilized in raising crops of some kind. Radishes, lettuce, beet greens, etc., will be purchased almost every month in the year, if people can get them. It is lots of work, however, and it is lots of care. The proprietor needs to be constantly watching. Something is getting too much sun, and needs shading. Another thing does not have sun enough. Sometimes, though not often, the plant-beds are too wet. A thorough underdraining fixes this, however.

When a rainy day comes, it is often very fatiguing to pull up the plants and put them up safely, to be carried to the different homes. I do not think I ever saw anybody who did not

get wearied, and more or less "rattled," by being asked again and again, "How much are these worth?" "Have they been transplanted?" "Have you any that have been transplanted twice?" "How much are these a dozen?" "Do you sell them any cheaper by the hundred?" "Are these early or late?" "Why do you charge more for tomato plants than cabbage-plants?" "Is it too early or too late to set them out?" etc. I do not often wait on customers unless very early in the morning or late in the evening. After a nice summer shower I frequently find customers out in the plant-garden, waiting, by half-past four in the morning; and a good many times between sun-down and dark, after the helpers have gone home tired, somebody wants plants. Now, it is very perplexing to me to remember prices, and it also wears on me to get a catalog and hunt up prices from that. To help all around in this matter we have had some very neat thin bass-wood boards, $7\frac{1}{2} \times 14$ inches in size, printed in large plain letters as follows:

PRICES OF VEGETABLE PLANTS.

25 Sweet-potato plants	10c	} 1000, \$3. 100, 75c.
25 Cabbage-plants	10c	
25 Celery-plants	10c	
12 Tomato-plants	10c	
12 Cauliflower-plants	10c	
12 Strawberry-plants	10c	}
6 Pepper-plants, 10c; 100, \$1.25.		
100 Onion-plants, 15c; 1000, \$1.		

We have these tacked up in front of the store, and across the road on a neat little stake, right in the midst of the plants. We print them on one of our printing-presses.



Not that which goeth into the mouth defileth a man; but that which goeth out of the mouth, this defileth a man.—MATT. 15:11.

The man of the world or the unbeliever spends his time and energies in warding off danger from the outside. The Christian fears only that evil which he finds *inside*, or in his own heart. The unbeliever fears and tries to protect himself from the damage his neighbors may do him—that is, such of his neighbors as are his enemies. The follower of Christ has nothing to fear from his neighbors, even though they be envious toward and attemny with him. He fears only that he *himself* may be led or tempted to do wrong. We sometimes say of a man or boy, that he is his own worst enemy. The evil in his own heart may do him *harm*—may wreck his *soul*; but evil in the hearts of others can do him but little *real* harm. The great difference between the Christian and unbeliever, it seems to me, is right here: The one fears God, and fears to do wrong. The other fears the great outside world—the selfish world, and fears that *it* may do him harm. Our text says that the evil on the outside, or that which surrounds a man, can not well defile him. False stories and false accusations may for the time throw a *shadow* over his fair name; but if he is honest and sincere, his honesty will

come out, and it will shine forth all the brighter for having been obscured a little while. Why, come to think of it, there is an old familiar text, Prov. 4:18, which says, "The path of the just is as the shining light, that shineth more and *more* unto the perfect day." Those who are evil-disposed, and those who are envious, do quite frequently try to damage and slander the reputation of almost any honest and true man; but they do not succeed.

I suppose most of you have been recently considering the life of Joseph. For a time he seemed to suffer injustice and persecution almost everywhere. He was honest and innocent; but this very innocence seemed to get him into trouble again and again. His brothers hated him because he very properly informed his old father of the tricks they were up to. They decided to put him out of the way, and probably thought they had managed it very shrewdly. Joseph, however, was undismayed, for his faith was in God and not in man—no, not even in his own relations. He was reluctantly obliged to lose faith in his own brothers. But he *never* lost faith in God. His wonderful industry, and his rare gift of generalship, soon made themselves known. His faithfulness over even any *little* trust that was put in his care was remarkable; and it called forth admiration and esteem from every one. His very purity of mind and thought made him a mark for the evil-designing. No doubt they thought it would be a smart thing to get that pure-minded Hebrew to commit sin and crime as they did; but they utterly *failed*, no matter on which side the fiery darts of the evil one were made to strike him. "No," said the boy, "my master has trusted me implicitly. He has turned over to me almost every thing, and put it into my hand because of his confidence in me. Shall I betray that trust, and sin against him and in the sight of the great God above?" He did not say it out loud, but I imagine he said it within his own heart, "No—a thousand times no. God help me to *continue* saying, 'Get thee behind me, Satan.'" He came near losing his head, it is true, and just because of his unflinching devotion to right and truth; and were it not that there was and is a great God above, as Joseph believed, he doubtless *would* have lost his head. *God rules*. Joseph was put down lower than ever. He was placed in the companionship of criminals and murderers; but his fidelity and wonderful industry kept coming uppermost. May be he sat down in sorrow and grief for just a little while to think that he should suffer all that because he refused to do wrong. I do not think he did very long, however. I can imagine that pretty soon he gazed about in the darkness of his dungeon, and spied an old broom. He went to slicking up an putting things to rights. The keeper was surprised. He had never met such a prisoner before. It was an easy matter for him to let Joseph take charge of the prison. Joseph was a master hand at taking charge of *any* thing. I read in one of the papers of a poor woman who wanted work. She applied to an editor. He asked her what she could do. She said, "I can sweep; and if you will give me a broom I will sweep out your office, and slick it up in a way that it has not—at least for some time—been slicked up before." She was a woman of education and intelligence. She was permitted to sweep the office. Pretty soon some of the help was sick; and when the question arose as to what *could* be done without the capable man who could no longer be at his post, she asked them to let her try. They had but little faith that the woman could fill such an important place, but were greatly surprised to see her show wonderful capabilities in that very line.

How many times I have seen that thing enacted! Somebody has been filling a humble position. Sickness or indifference, or something else, leaves an important post vacant. Now is the chance for the one who has been watching and waiting for promotion. Don't you see that outside circumstances can never keep a good man or woman down very long? and yet how often we hear the complaint, "I do not get my just dues; I never *did* get my just dues. The unscrupulous and forward are sure to crowd in ahead of me." Sometimes the one who grumbles, and finds fault with circumstances, has added, "In fact, there is no chance at all for an *honest* man in such a world as this." The latter is a point-blank untruth. It is just the *other* way. There is a *tremendous* chance every day and almost everywhere for those who are unflinching in their devotion to right and principle; but it is true that there is *not* a very good chance anywhere for one who is tricky and dishonest.

A man is harmed, as in the language of our text, by what he permits to come forth from his mouth. If he permits his mouth to frame trickery and deceit, it damages and injures him a thousand times more than any slander that may be started against him; for, as time passes, everybody will recognize that the slander against the innocent man is not true. It does not fit him at all. It is not *like* him. The thing which, however, he in an unguarded moment allows to escape his lips—the thing that he should *never* have permitted his lips to utter at all—is what kills, and pulls a man down. If such things are permitted to slip out once, they will again; and all along in this pathway of life these things will be noticed, and they mark and leave their *impress* on the character and on the mind. A great many strictures are uttered in regard to the "cold and unfeeling world." I believe good men have not found the world cold and unfeeling. There is evil in the world, it is true. There are vicious and evil-disposed persons; but they are being constantly held in check—at least they are in most neighborhoods and localities; and there is such a constant and unceasing clamor for men of strict integrity—that is, integrity coupled with energy, intelligence, and industry, that such people are constantly being wanted.

You have known people, doubtless, who rarely speak ill of absent ones. I once heard a young Christian say that it kept him so busy weeding out and correcting the sins that he constantly discovered in his own heart that he had not much time to dwell on the shortcomings of others. Oh what a wise saying was that! When Joseph, the Hebrew slave, was sent down into Egypt among the depraved heathen people, instead of meeting injustice and wrong he very soon found everybody ready to give place to him; and not only that, Pharaoh and all his subjects seemed quite willing to extend a helping hand, and invite him to step, even up to almost the highest place in the kingdom. He was asked to take a seat next to the throne occupied by the king himself; and it is so even now. Do not, I beg of you, dear friends, worry about what your *enemies* may do to spite you. In fact, you need not pay any attention to your enemies in that line at all; and, above every thing, do not think of waiting for a chance to "pay" them back. *Love* ye your enemies, do good to them that hate you. If you get into a fighting mood—and I do believe it is a grand good thing to get into such a mood sometimes—turn right about resolutely and fight the *sins* in your *own* heart. Fight the selfish feelings that continually bubble forth. Hold them in check. Fight *Satan*, not your neighbors. I suppose most of us now and then

get into a fighting mood. We say, "I do not believe it is my duty to stand it any longer." There is one illustration I should like to give here; but I fear some of my own good neighbors may see it and feel hurt. I think, however, I will risk it after all; for the moral it carries is too good to be lost.

Some time last fall the cattle from a neighboring pasture had a fashion of getting through into my rich creek-bottom grounds. For a time we were puzzled to see how they got out of the pasture lot. It actually seemed as if the cows had learned to be sly enough to wait till everybody had gone to meeting, or till some time in the day when everybody was especially busy. Then these cows would be out of the pasture and in the garden; and it was hard to tell by what hook or crook they managed it. At length we discovered that they got through near the bridge, and then this was fixed up securely; but in a few days the cows were in again. Then it turned out that the iron cattle-guard on the railroad had been removed by the division boss, and a wooden one put in place of it. The cattle had, however, got a taste of the "garden sass," and they walked over the wooden cattle-guard, after very little practice. We remonstrated with the railroad company; but it was rumored that they were not paying expenses, and, in fact, the road had gone into the hands of a receiver, and there was no help for the trouble. The owner of the cows finally took them out of the pasture, and kept them in a stable. It was not very many days, however, before they were in the garden again, and a small boy was chasing them pell-mell over my soft ground, prepared with so much care. Finally winter came and ended the trouble for the time being. The cows, however, had not forgotten a bit of their frolics through my stuff, even though they had not had a taste for months before. One beautiful day in May, when everybody was too busy to chase cows, or even to think of them, they were again running through my choice currants and gooseberries, and raising havoc as only cows can do. We then put them back into the pasture. The man had scarcely got to his work, however, before the cows were there again. He drove them out the second and *third* time; and while we were eating dinner a message came to me saying that the cows were holding "high carnival" *again* among my stuff. I asked the man who drove them out what the trouble was, and he said they walked right over the cattle-guard as fast as he drove them out. He said he spoke to the boss of the division gang, who was at work right near the crossing; but he only replied in a sarcastic way that the cows did not trouble *him* a particle—why should *they* look after them? I remember of thinking that the law was on my side, and that I would have damages. I mentally figured up that it was worth just about an even \$—.00 for all the trouble, worry, and loss I had sustained. But a better voice suggested, "Oh, no, Mr. Root! You would not take \$—.00 from your neighbors, who are hard-working farmers, nor from the man who owns the cows, nor even from the railroad company with all the bad luck they have had." I mentally decided that I should not feel easy to take this sum of their money; but I thought half would be little enough, surely. But conscience kept on, and it reminded me of Abraham when he was pleading for the Sodomites. When conscience had got me down to a very moderate sum I concluded it was too small an amount to make a fuss about. But I gave vent to a groan—it was a mental groan, no doubt—when I looked at the stuff and the cow-tracks in the soft mellow earth.

Now, the incidents as given above are all

true—that is, they were true from *my* standpoint. Let me now give you the sequel. After dinner I jumped on my wheel, with a determination to have that cow nuisance abolished. If you will excuse me, I had rather not tell where I started to go first. The exhilaration of riding on the wheel brought out my better feelings, as it almost always does, and I whirled around and went down to the railroad depot. The agent was at dinner. The division boss—the very man who made fun of our sufferings from the cows—sat resting with his men near. I decided to commence very mildly, and I very soon learned that the man who owned the cows came to see them, and they promised to have a good iron cattle-guard put in before his cows would arrive at the pasture lot. And this *had* actually been done. But the cows had learned the trade so well with the old wooden one, they walked right over the new iron one, with only a little practice. Then I suggested digging a pit, as they usually do under a cattle-guard and offered to let my men do it. “Why, Mr. Root, that is what we wanted to do, and would have done it last fall; but there has been a law enacted recently, against digging any more pits under the cattle-guards.” This was surprise No. 1 to me. He added further that he thought the superintendent of the road would let them dig one there *contrary* to law if I would send in my request. The telegraph instrument was clicking within a few feet of me, and I thought it very likely the pit could all be nicely made before night. But it would be simply digging a pit for my neighbor’s cows to fall into; and conscience put in, “Mr. Root, you know that is not according to your profession.” I replied as before, “No, no! I can not think of digging any pit.”

I rode over to see my neighbor who owned the cows. His wife said he had just been told that the cows were annoying me, and that he jumped up from the dinner-table and went and got them, and put them back in the stable the minute he heard of it. That was surprise No. 2. Next day the neighbor who *owns* the land came up to me looking considerably anxious and worried. Said he:

“Mr. Root, I have always heard that you are a good-natured man; but I fully expected—in fact, I should not have blamed you a bit if you had done something besides *talk*, after all the annoyance you have had from these cows. I am thoroughly ashamed of myself; and I have just come to inquire if you have any thing that will do for posts, that you can sell us, so we can put up a wire fence along each side of the railroad, before night. I am very busy with my farmwork, and I tell you it seems as if I could *not* stop just now to put up that fence. But you are taking it so good-naturedly it makes me all the more determined that the pasture shall be fenced so you won’t have any more anxiety or loss in that direction.”

We delivered the posts for them, and in an hour or two he and his men were very busy making a substantial fence. You see, it really belonged to the railroad company to put a fence on each side of their track; but knowing the circumstances of the new road at just this period during the financial depression, without being told, we knew they could not very well do it. While they were at work at the fence it just occurred to me that I wanted a favor of my neighbor who owned the land. I had been thinking for years back of turning Champion Brook so as to run it into our carp-pond, and use it for irrigating the particularly rich creek-bottom ground where we raise our choice strawberry-plants. I told him my wishes; and almost before I got through he said, “Just go right on to our land and make any improve-

ment you please, and take all the water you want.” Now, friends, suppose I had sued him for damages on account of the cows. Would I have felt like asking him for permission to start a small irrigating canal right on his ground? Not much. Well, then I happened to think further. I wanted to run the irrigating canal (a small one) on the ground that belonged to the railroad company. As soon as I told them my wishes they said, like my neighbor, “Go ahead, Mr. Root, with what you have in mind. We know you well enough to know that you will never do any thing that will in any way injure or interfere with our property.” Suppose I had commenced a suit against *them* for damages sustained by the cows stamping on my gooseberries.*

Now, I do not know this minute who would be legally responsible in such a case—the man who owned the cows, the neighbor who owned the pasture lot, or the combination of “neighbors” who own the railroad. I feel a little glad to think I have not even asked legal advice in regard to the matter; and, oh I am so glad I did not say out loud to anybody (except to dear old GLEANINGS) that I was ever tempted to think of prosecuting anybody! And I am glad again that, instead of fighting any of these neighbors, I fought and successfully downed the spirit that prompted me to think of wanting money in the way of damages, through this whole transaction. Somebody might ask what the damage really was. Well, I suppose I might have got prejudiced witnesses to testify that, all things considered—no, no! I guess I will not say that. I will say this, however: I have seen farmers go to law and collect \$50.00 damage because a drove of cows rambled all night through growing crops. A good lawyer would make it seem quite reasonable that about \$50.00 would be about fair. But perhaps another good lawyer would make it equally plain that the owner of the corn did not sustain more than \$5.00 damage, if he would take his hoe and spend a few hours in straightening up and fixing up the mischief done. You see, it depends a good deal upon how we look at things.

Now, in view of the above, let me ask you, dear friends, which it is that hurts a man—the damage he sustains from outside, or the permanent damage to *soul* and *body* that comes from letting words escape his mouth that never ought to have been allowed to slip out at all.

BOOK AGENTS, AGAIN.

Friend Root:—Don’t you think you were rather hard on that book agent? Please understand I am not a book agent myself, and never expect to be; but, “every man to his calling.” God did not endow us all alike. Some men can come right down to business, and others can not. Sometimes men appear too fast, which they should not do. That is scriptural. You should not blame him for wanting your name at the head of his list. I presume a great many men take a vast amount of your time in getting to the point. I look on my fellow-man as I do on the different churches. They are all treading the same road, and I can not object to any man calling so long as he keeps within the bounds of honor. You say he began to talk about spiritual things,

*Some may urge that there were peculiar circumstances connected with the case I have mentioned, and that it was “policy” for me to keep still and not make a fuss. Exactly; and I do not believe there is ever a neighborhood quarrel but that this same kind of policy exists. Any busy man is always likely to need favors of his neighbors; and it is not only policy to be *honest*, but it is also policy to practice and cultivate this little virtue that “suffereth long and is kind.”

and you did not say very much, implying that you did not wish to prolong his visit. Suppose some of your readers were to say, "I don't want to read Mr. Root's spiritual essays, for they are too long, and are a waste of time." Now, Bro. Root, I think they are too short. I do not think anything tending to a spiritual point is a waste of time. You must not allow peddlers to fret and tempt you to be harsh. You must practice what you preach, or else we shall not know how to take you. G. W. REAMS.

Franklin, Tenn., Apr. 18.

[Many thanks, good friend R., for your very kind criticism, as well as for your pleasant words at the conclusion. I confess that I myself felt a little uneasy about the outcome. Ernest has similar trials, and I submitted the matter to him. He said that, instead of showing the man the door, he thinks that he would have left the room himself. In fact, I have known him to do that. But I submit the question: Is it manly, and is it the right thing to do, to let a book agent drive you away from your own premises, or out of your own home? In regard to spiritual matters, I fear, my friend, you do not quite understand me. I am always willing to talk with anybody on spiritual matters when my *assistance* is needed. But this man had made an appointment, and I became suspicious because he *would not* come to the point in regard to said appointment. His spiritual talk was "put on." I very soon decided it was simply a cloak to win my favor. In regard to wanting my name, I do not want people to buy things because I have bought them. An agent for some agricultural machine tried to make T. B. Terry a present of said machine, that he might tell people around that he had sold one to Terry. Friend Terry very properly refused to take it. Then the agent wanted to sell him one for a small part of its price, thinking this would overcome Terry's objection, for he could then truthfully say he

had sold such a machine to Terry. Now, here is an example for all of us. Friend Terry declared he would not have the machine at all unless at full price or full wholesale price, and then he could with a clear conscience speak of its good points as well as of its poor ones. I have again and again refused to accept books—that is, where the agent was to have the privilege of putting my name on his list of *purchasers*. A book agent recently came on our premises, *without permission*, and sold a book at an enormous price to several of our employes who ought to have used their money for paying their honest debts instead of buying an expensive book. He talked them into it when they ought not to have bought it, and some of them owned this up to me afterward. But the real important point was the last one. Why could he not have given me his promise that he would hereafter carry his book in his hand, and tell people his *business* before he caused them to waste time, as in my case? If it be true, that public opinion is such that it will not do for a *book agent* to tell people what his business is at the outset, then I think no real lady or gentleman would undertake such an occupation if it could be very well helped.]

SOMETHING ON THE OTHER SIDE.

I think, Bro. Root, courtesy is a very good thing, but altogether out of place when applied to *that* book agent. I would suggest that the next one of that sort that comes along, you show him the door, and, at the same time, help his exit. He will understand that; the other, he will never understand. It will save you a world of trouble, and teach him a lesson he will never learn in any other way. It is time to call a halt in this misdirected sympathy and forbearance toward such people. "Don't cast pearls before swine." For the special benefit of book agents I've been thinking of raising a couple of good dogs—brisk lively fellows.

Center, Tex.

JAMES H. SCATES.

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That I have the
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BEE-KEEPERS' SUPPLIES

IN NEW ENGLAND?

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A full line of every thing needed in the apiary at prices to suit the times.

BEEs, QUEENS, and NUCLEUS COLONIES of my old reliable strain, at prices way down.

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CROSSMAN'S BEAUTIFUL QUEENS

Are bred from the very best 5-banded stock, and are guaranteed to give you satisfaction.

Untested, \$1.00 each; one-half dozen, \$5.00; \$9.00 per dozen. Tested, \$1.50. Select tested, \$2.50 each. Send for Price List.

W. P. CROSSMAN,
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Beautiful Native Flowers and Plants of Florida.
Cheapest in the South, and guarantee. Send stamp for price list. MISS LIZZIE ADAM, Green Cove Spring, Fla.

Quigley's Golden Italians

Are big yellow bees that are hardy, gentle, and good honey-gatherers. Warranted queens, April and May, \$1.00 each. Safe arrival and satisfaction guaranteed. Every thing needed in the apiary, best quality, bottom prices, low freight. Price list free. E. F. Quigley, Unionville, Mo.

TESTED ITALIAN QUEENS, \$1.00 each; Select tested, \$1.50; untested, 65 cts. Two-frame nucleus, with tested queen, \$2.00; with untested queen, \$1.50. Queens ready April 1.

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New edition, just out. This is conceded to be the fullest, most scientific, and one of the best of our American bee-books. Every bee-keeper should have one of the late editions. Price, by mail, \$1.25. Liberal discount to the trade.

A. J. COOK, Claremont, Cal.

Notice to Kansas Bee-keepers.

I keep in stock a full line of E. Kretschmer's make of Hives, Sections, and other supplies needed in the apiary, at very low prices. Also Italian bees and queens for sale. A. W. SWAN, Centralia, Kan.

World's Fair Medal

Awarded my *Foundation*. Send for *free samples*. Dealers, write for wholesale prices. Root's new *Polished Sections* and other goods at his prices. *Free Illustrated Price List* of every thing needed in the apiary. M. H. Hunt.
Bell Branch, Mich.

Good! Good!

Those wishing the finest and best business bees, both for pleasure and profit, should know that Jennie Atchley is headquarters for such queens. I breed both the 3 and 5 banded strains, at the following prices: Untested (March, April, and May), \$1.00 each; \$5.00 for 6, or \$9.00 per dozen. June till October, 75 cts. each; \$4.25 for 6, or \$8.00 per dozen. I breed my queens in separate yards, and I have as fine Italian bees as there are anywhere. Nuclei and full colonies. I have one straight merchandise rate on bees by express—lowest in U. S. Fine breeders always on hand; 3-banded, \$5.00; for straight 5-banded breeders, apply by letter. Also bees by the pound. I guarantee *all* my queens to be good and serviceable, and my fine faultless breeders unexcelled in the world. Safe arrival and satisfaction.

I also have a carload of A. I. Root's Dovetailed hives and Bee-supplies to accommodate my Southern customers. Dadant's foundation and Bingham smokers. Send for catalogue.

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I challenge any one to show up a strain of bees that are superior to my *Golden Italians*. They have excelled all competitors by practical test. Gentle, industrious, good comb-builders, enter the sections readily, are not inclined to swarm, and are perfect beauties. Descriptive circular free. *Sections, \$2. per M.* Dovetailed hives way down.

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We have on hand the following stock of *choice white* 4-piece dovetailed sections, which we offer at \$1.00 per thousand:

75000 4 1/4 x 2, open top and bottom.
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If you keep **BEEs**, subscribe for the **Progressive Bee-keeper**, a journal devoted to Bees, Honey, and kindred industries. **50 cts. per year.** Sample copy, also a beautifully illustrated catalogue of Bee-keepers' supplies, **FREE.** Address
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WARRANTED QUEENS.

Why buy *untested* queens and take your own risk of pure mating, when I warrant every one of my queens to be purely mated? Look over the ads. and see how few *dare* do this. Warranted Golden Italian queen, \$1.00; six for \$5.00, ready about May 1st. Safe arrival and satisfaction guaranteed.

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in Bee Culture a Whole Year; 10 strong eyes of Freeman Potatoes (pure), and 10 packets of flower and vegetable seeds, for **40 CENTS**, silver. This offer is made to boom our circulation.

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Daughters of one of Doolittle's very best golden five-banded breeders, mated to the very choicest drones from Jennie Atchley's 5-banded strain, thereby securing a direct cross with the best 5 banded stock obtainable. My aim is to rear nothing but the best, regardless of cost. Untested, 75c; 1/2 dozen, \$4.25; dozen, \$8.00. Safe delivery and satisfaction. Money-order office, Monongah. P. O. address, Worthington, W. Va. Queens ready May 25.

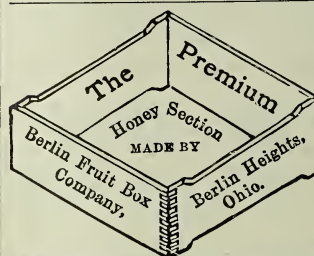
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Brown and White Leghorn, \$1.25. P. Rock, Bl'k Minorca, \$1.50. Bl'k Langshan, L't Brahma, Pit Game, Buff Cochin, \$2.00 per 13. Fowls for sale. Circular free.

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Thin Flat-Bottom Foundation

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